JUNE, 1950

American Engineer

JUN 1 1950

UNIVERSITY OF MICH.
GENERAL LIBRARY
ANN ARBOR, MICH.
COMP 11 44

IN THIS ISSUE . . .

WHERE WE STAND ON AIR POLLUTION CONTROL

THE SMOG AND PITTSBURGH
The Before and After of The Steel City's Victory

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS
FOUNDED 1934

21,000 *professional engineers now read* AMERICAN ENGINEER

● **AMERICAN ENGINEER** *sells the men who make key buying decisions* — consulting engineers and professional engineers in industry and government!

● **AMERICAN ENGINEER** gives you *all-inclusive coverage!* In a single package your advertising reaches engineers in the CIVIL, MECHANICAL, ELECTRICAL, CHEMICAL, MINING branches *plus* members in all sub-divisions.

● **AMERICAN ENGINEER** is read by the *top men who buy or specify your product* —professional engineers who influence the spending of millions of dollars for services and materials! These are the men who have the *last say* as to whether your product or another is to be used.

● **AMERICAN ENGINEER** provides an advertising media that enables you to sell 21,000 professional engineers at low cost — it belongs in your advertising budget for 1950.

21,000 registered professional engineers look to the American Engineer to report progress of the effort toward full professional stature for engineers.

It reports evidence — at the national, state and local levels—that progress is being made . . . and in a series of original articles both by members of the profession and outsiders points the way for further progress.

It reports factually on economic, social, legislative and political problems facing the profession. Because it steers clear of technical articles, it is of vital interest to engineers in all branches of the profession who realize the need—both socially and economically — for recognition of engineering as a learned profession.

Write for More INFORMATION TODAY!

Address:

Business Manager,
American Engineer,
1121 15th St., N. W.
Washington 5, D. C.

American Engineer

JUNE 1950

► **COVER STORY. Where We Stand On Air Pollution Contol** 5
By H. B. Lammers, Chairman, Coal Producers Committee For Smoke Abatement

An Engineer In Point Four 8
By J. E. Stepanek. The actual experience of an engineer working in underdeveloped China

The Engineering Profession Is At The Bifocal Stage 10
By Clarence T. Shoch. How can we best add and strengthen opportunities for engineers everywhere?

Sailor It's Cold Outside 12

Regular Features

Editorials 4
What They're Saying 14
Letters To The Editor 16
Legislative Report 17
Accent On Activity 19
Around The Nation With Our Members 20

Advertising Representatives:

William R. Stewart,
9 S. Clinton St.,
Chicago 6, Ill.

Frazer Sheets, Jr.,
1941 Grand Central Terminal Bldg.,
New York 17, N. Y.

CCA
Member, Controlled Circulation Audit

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS FOUNDED 1934

Editor
KENNETH E. TROMBLEY

Business Manager
ARTHUR F. BECK

Publications Committee, NSPE
GEORGE KRUEGER, Chairman

"The engineer's works are out in the open where all men can see them. He cannot deny he did it. The doctor's mistakes are buried in the grave. The voters forget when the politician changes the alphabetical names of his failing projects. The lawyers can blame the judge or the jury. Unlike the clergyman, the engineer cannot blame his failures on the devil. But the engineer has great satisfaction in his good works which, coming from his imagination, gradually grow into realization, in stone or metal or energy, to bring jobs to men and homes with the necessities and comforts."

—HERBERT HOOVER.

The American Engineer is published monthly by the National Society of Professional Engineers, 1121 15th St., N. W., Washington 5, D. C. Entered as Second Class Matter Feb. 8, 1948, at the Post Office, Washington, D. C., under act of March 3, 1879. Copyright, 1950, by the National Society of Professional Engineers. Not responsible for opinions expressed in signed articles. Subscription Rates: $2 per year in advance to members of NSPE and its Affiliated Societies; $3 per year in advance to non-members in U. S. A. and its possessions, Canada, and Mexico. Foreign, $4 per year. Single copy, 35c.

EDITORIALS

Asking For Trouble...

The venerable New York *Times* recently devoted a full page of one edition to reporting the results of a study of American history courses in Colleges and Universities in this country. One important conclusion drawn from the survey revealed that only twelve per cent of all undergraduates and six per cent of the graduate students reached in the survey were enrolled in American history courses this spring.

The survey covered four categories of institutions—liberal arts colleges and universities, teachers colleges, junior colleges and professional and technical schools. When asked whether or not they thought a knowledge of American history was essential for good citizenship, 90 per cent of the institutions in the first three groups answered "yes," but, interestingly enough, only 52 per cent of the educators representing the professional and technological schools thought so.

It is unfortunate, indeed, in these days when communistic infiltration is a threat to our very way of life itself, that such apparent shortsightedness still exists among our technical educators. With cases on all sides of well-educated, intelligent Americans allowing their minds after college to become perverted with the "ism" dogma, it is not encouraging to realize that a huge portion of the men teaching our young engineers do not feel strongly about instilling Americanism in their students.

Those favoring the teaching of American history to all students, advanced many reasons for their position. They pointed to the need of giving the nation's youth a knowledge of the background of this country's founding, of its leaders and the relationship between existing problems and those of the past.

Surely the engineering profession agrees that if the young engineer is to serve his country as befits a man of education and prestige, he should most certainly understand what his country was, is, and should be.

A Victory In Defeat...

On April 29 last the Post Office Department made a commemorative stamp issue honoring the "railroad engineers of America." The design of the stamp is such that that stellar gentleman of song and story, Casey Jones, steals much of the glory on this the fiftieth anniversary of his death at the throttle. Now, we have no quarrel with Casey being remembered as the outstanding railroad engineer of all time, but we do object to his being misrepresented as a railroad engineer or any other type of engineer.

It's an old story this business of the railroad engineman being termed an engineer. The only heartening thing to come from this latest skirmish, is the intensity of the fury that arose when the issuance of the stamp was announced. Engineers wrote letters to stamp magazines, to their daily newspapers, to the Postmaster General of the United States. Yes, the tag of inertia that is so often pinned on the professional engineer was not in evidence. True, the protests came too late to stop the printing presses, but not too late to let a portion of the world know that the profession is no longer a giant asleep.

Professional Development...

Usually one does not look to the federal government for leadership in a professional development program. This is particularly the case with regard to the engineering profession. A happy exception to this general rule is observed, however, in a new program of the Bureau of Reclamation, unofficially titled, "Interns in Reclamation."

The program is designed to steer the young engineer entering the Reclamation Service through the labyrinth of activities, regulations, and specialized phases of the agency's work in order to turn out a well-rounded engineer for the future instead of an engineer trained and restricted to one specialized field. The Bureau's announcement of the program is accompanied by the statement, "engineering has become highly specialized, and the youngster may easily get lost or get misplaced."

Chief Engineer L. N. McClellan has started the rotation and training program in the Branch of Design and Construction with 275 recent engineering graduates in the first group. The new engineers will move through four to eight differing assignments, a new one coming every 3 months for 1 to 2 years.

Space does not permit a detailed report of the various steps in the rotation and training program. Certainly it is worthy of study by those who are concerned with the future of the young engineer. Particularly is it an encouraging development at a time when engineering leaders in the industrial field are recognizing the need for giving the young engineer the proper start in his professional life. The Bureau of Reclamation is to be commended for initiating a tangible step in the right direction.

You Too!...

We noticed two unrelated items in the same issue of a daily newspaper the other day. Neither mentioned engineers or the engineering profession, but . . . listen!

The Federal Bar Association, meeting in Washington, adopted a resolution noting a "general encroachment" in the use of "lay personnel" in positions that should be filled by attorneys in government, and decided to "bring this matter to the attention of the Civil Service Commission . . . to the end that qualifications for legal positions in Federal service be set and maintained at the level of duly licensed attorneys." Has a familiar ring, hasn't it? Now for the next one.

A Takoma Park (Md.) dental technician was found guilty of practicing dentistry without a license by a jury in Prince Georges County Circuit Court. Charges were brought by the State Board of Dental Examiners which alleged that the individual practiced dentistry when he made impressions for a set of teeth. The offense calls for from $50 to $300 in fines and up to six months in prison. The defendant is appealing the decision.

You see, the engineering profession isn't the only one with its troubles.

The Cover Photo . . .

The bottom half of the photograph shows the Pittsburgh skyline on a winter day in 1947. These "Midnight At Noon" days have ended now (above) with the successful enforcement of an air pollution control law. See next page of this issue for more on this timely subject.

WHERE WE STAND ON AIR POLLUTION CONTROL

By

H. B. Lammers, Chairman
Coal Producers Committee for Smoke Abatement

BECAUSE of the tremendous amount of publicity given to the subject in the last ten years many persons believe that the cry against smoke and air pollution is of recent origin. Actually it started, according to recorded history, before the birth of Christ. In the year 37 B.C. the Latin poet Horace was singing:

"On thee will rest thy father's stain,
Though giltless, Roman, till thou put
In order Shrine and mouldering fane,
And statue grimed with dingy soot."

Apparently the Roman city fathers did not read poetry. Or if they did, they refused to heed Horace's dire threat, for nineteen centuries later, Rome does a thriving trade with tourists who come to the Eternal City for the one purpose of viewing the "shrines and mouldering fanes and statues grimed with dingy soot." It must be admitted, however, that more tourists might make the pilgrimage to Rome if the poet had been heeded.

Perhaps one reason why so little progress was made in cleaning the atmosphere in all those centuries was because the engineers were not consulted. As a matter of fact, even to this day, many air pollution abatement programs are started by men and women who have no training or experience with the problem; who have no knowledge of the economics involved, but who have a holy faith that if they can induce their city council to pass a law "with teeth in it" the problem will be licked and everybody will be happy. This sort of thinking is gradually disappearing, but the idea that there is some easy method to accomplish results still persists in many places.

The old axiom that "truth will out" undoubtedly is true, but it has been a long time proving itself insofar as air pollution is concerned. As early as 1307 in England a commission was appointed to "inquire of all such who burn sea coal in the city (London) or parts adjoining, and to punish them for the first offense with great fines and ransoms and upon second offense to demolish the furnace."

Few cities are immune from air pollution. Here the early morning smog closes in on Chicago.

Engineers Are Needed To Help Solve Age-Old Problem

Air pollution spelled tragedy for many who died in Denora, Pa., smog (above). But air may be polluted without looking or smelling that way. The thousands of automobiles in a large city such as the one shown below, contribute their gaseous exhaust to the contamination. They also stir up much dust and dirt, as do the throngs of pedestrians using streets and sidewalks.

Of course the plan did not succeed even though there is a record of one man having been hung for repeated violations. One reason it did not succeed was because it was not predicated on technical knowledge; another, because it violated economic law. Without coal England never would have become a world power.

In more recent times no one has proposed that the equipment be abolished for a second smoke violation, but numerous persons are dreaming of solving the air pollution problem by changing either the type or kind of fuel burned. The fallacy of this thinking becomes apparent immediately to the impartial investigator, even one without engineering training, because whichever kind or type of fuel is selected, examples can readily be produced to disprove the theory. Does the city which burns a preponderant amount of high volatile coal, believe it can cleanse its atmosphere by switching to low volatile; does the present low volatile city look toward anthracite as the answer to its dreams; does the anthracite city hope for the day it can burn gas or oil in order to rid itself of pollution? They probably do—at least some of them do, even though any engineer worthy of his salt will quickly point out to them that there are various cities in this country which burn any one of these fuels exclusively or almost exclusively, and yet every one of these cities has a pollution problem. This approach to the problem also would be wrong from an economic standpoint, for all fuels must move in a competitive market and no one can successfully disrupt this distribution for any appreciable length of time.

All of which puts this problem, where it should have been all along, into the laps of the professional engineer. His is the responsibility of designing and installing combustion and special process equipment which might contribute to the atmospheric pollution. In his executive capacity, he is in addition the manager of the business, at least so far as maintenance and operation are concerned. And last but not least, by qualification and experience he is authorized by law and is licensed in the field in which these plants and processes are located.

Why then has the professional engineer tended in the past to shy away from this air pollution problem? Why has he permitted the emotional "solution" to this problem to be shouted from press and pulpit without raising his voice? The reasons are not difficult to find. First of all many smoke abatement "campaigns" are strongly flavored with political aspirations and considerations; second, until quite recently the salaries of many smoke department officials have been too low to be of interest to good engineers; third, it has been only since the war that any other approach than fuel application was accepted as a solution to the problem. Obviously the professional engineer cannot engage in political arguments. His professional code of ethics does not permit him to criticize his fellow engineer; nor will his professional pride permit him to enter into controversy with a chief smoke inspector who may be a professional engineer also.

Of course there always will be a certain amount of politics in any pollution abatement program—that is unavoidable under our system of government. But the day is rapidly approaching if it is not already here, in many cities, when a persistent public demand for cleaner air will result in a continuing effort despite any machinations of the politicians.

We have had smoke abatement laws for the past 700 years and the problem is still with us! Can this slow progress be attributed in part to the fact that the professional engineer has not interested himself in this problem? Surely the solution to these problems must be found sooner or later and if we cannot look to the pro-

fessional engineer for the answers, where can we look?

YET the Coal Producers Committee for Smoke Abatement has surveyed all types of plants in many cities in this country and Canada. There is enough work to keep all the engineers in the country busy for many years to come if smoke and air pollution are to be abated to a satisfactory level.

Investigations have revealed that too many plants are not properly designed, constructed, and installed to perform an efficient job of smoke abatement. One out of seven plants is overloaded! This overload is currently being charged to the war and the consequent expansion of facilities, but the fact is that we have found countless plants with overloaded boilers and stokers where no appreciable changes in power load have taken place in years.

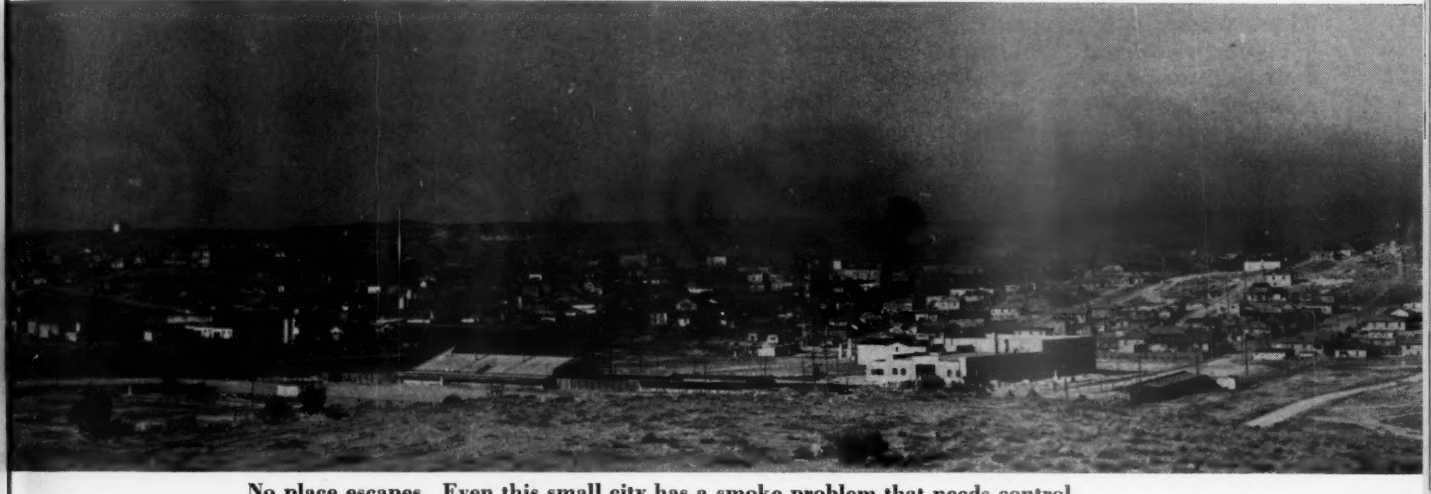
Hence it is apparent that overloaded equipment is due to faulty engineering which in turn is often due in part to effort to reduce installation costs to a minimum. Many installations currently suffering from overload were purchased and engineered during the '30's. Many were purchased on a competitive basis, and the jobs were awarded to the lowest bidder, with full realization that the design

Controls—In this day of high fuel costs, it is unfortunate that more attention is not given to the use of simple controls which would make for reliability of operation and smokeless, efficient combustion. Savings of 10 to 20% are possible if more care is exercised in the design of such equipment.

Refuse-burning Plants—Little or no thought has been given to the proper design and installation of incinerators and other refuse-burning plants. This is particularly true of incinerators installed in apartment buildings, hotels, and commercial establishments, while those installed in hospitals and industrial plants frequently do not incorporate even the basic essentials for complete and smokeless combustion.

The weight of material consumed in incinerators and refuse-burning plants compares favorably with the weight of fuel consumed. Thousands upon thousands of tons of refuse and garbage are consumed in furnaces, and the resultant air pollution nuisance is charged to fuel burning plants. It is only recently that this phase of atmospheric pollution has been given attention.

WASTE and refuse are extremely difficult to burn without excessive smoke. It is surprising for example how



No place escapes. Even this small city has a smoke problem that needs control.

was inadequate and the facilities provided could at best do only the minimum job demanded.

Lack of reserve capacity is the general rule in most plants, and is by no means the exception. In our inspection of properties other than those in the industrial and manufacturing group, the ratio of units of fuel-burning equipment to plants is approximately 1.2 to 1.

MANY plants are improper in design. Many furnaces have inadequate furnace volume and headroom. The application of fuel-burning equipment is frequently very unsatisfactory, and unsuited for the purpose and duty intended for it. As an example, we find the application of spreader stokers to boilers and steam loads without proper regard to the type of controls, variable loads, smoky combustion, and fly ash emission. Spreader stokers are still being installed without overfire air jets and collectors. Misapplication of equipment exists in 1 out of 6 plants. Here are a few specific examples:

Stack—Most operators cannot observe the top of their stacks because the designing engineer has failed to provide for this necessity. This is particularly true during the hours of darkness, and is of more importance in the early hours of the morning when much of the smoke is emitted, causing our morning "smogs."

little knowledge we have on burning wood refuse, a fuel that contributes a great deal of smoke to the atmosphere. When such refuse materials are burned in combination with other fuel, a difficult problem of proportioning fuel and air results, which in most plants is not properly provided for, and excessive smoke results—with poor fuel efficiency.

Furnace volume must be ample and adequate to do a complete job. On a recent survey (in one city) we counted more than 25 plants which consumed refuse and waste products. These included such materials as wood wastes, garbage, leather products, refinery wastes, paper products, sludge, etc.—products which make considerable smoke, odors and contribute to the air pollution total. The field of refuse burning is wide open for improvements in design and efficiency of utilization; there are many complications involved. This is in the province of the professional engineer if our smoke and atmospheric pollution is to be solved. Pollution from foundries, paper mills, cement mills, steel plants, etc. offer additional problems for the engineer.

Power and heating plants supervised by professional engineers are to be found in a state of disrepair and mechanically defective. One plant in seven is in this

(*Continued on page* 28)

an engineer in POINT 4

The Author

by

J. E. Stepanek

Simple engineering pays off. The spinning rate was quadrupled on the loom shown above with a device costing a mere five dollars.

FOUR years ago in Shaoyang, Western Hunan, China, approximately seven hundred air-line miles southwest of Shanghai, a research center was established complete with machine shop, foundry, laboratory and a private motor transport system. At this base, and in various other sub-bases spotted throughout the interior, a total of two million U. S. dollars was spent in developing new industrial methods, in training young engineers, and in employing these technicians to impart what they had learned to their fellow countrymen: In other words, a typical Point 4 program.

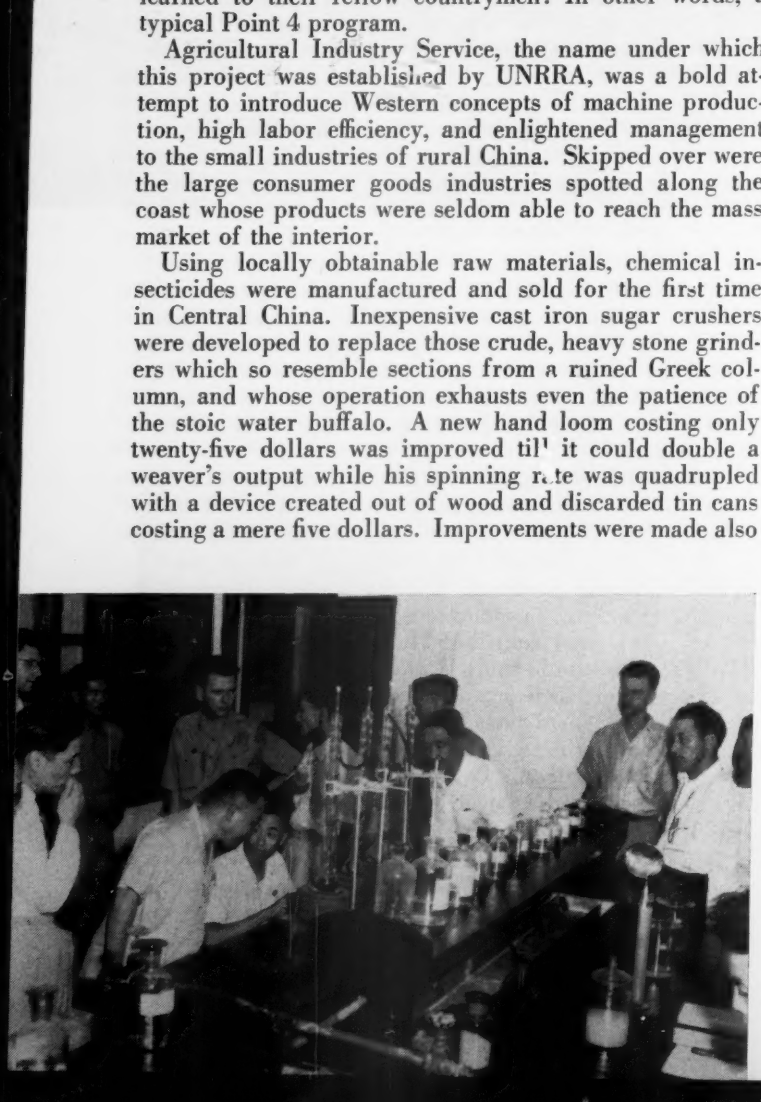
Agricultural Industry Service, the name under which this project was established by UNRRA, was a bold attempt to introduce Western concepts of machine production, high labor efficiency, and enlightened management to the small industries of rural China. Skipped over were the large consumer goods industries spotted along the coast whose products were seldom able to reach the mass market of the interior.

Using locally obtainable raw materials, chemical insecticides were manufactured and sold for the first time in Central China. Inexpensive cast iron sugar crushers were developed to replace those crude, heavy stone grinders which so resemble sections from a ruined Greek column, and whose operation exhausts even the patience of the stoic water buffalo. A new hand loom costing only twenty-five dollars was improved til' it could double a weaver's output while his spinning rate was quadrupled with a device created out of wood and discarded tin cans costing a mere five dollars. Improvements were made also in the manufacture of paper and in introducing cement as a new construction material.

Working in an economy not educated to the use of metals or the application of chemical knowledge to the processing of foods and fibers was a technically easy task, quick to show results, satisfying to the engineers.

But what about the job of bridging the gap between the cultures of the East and West to create an atmosphere congenial to both and an environment in which American engineers might function purposefully? Although adjustments were required from both sides, the engineer acting as teacher found himself indirectly responsible for both.

Our engineers at the very start had to make a personal adjustment to a mode of life far different from that in the West. Unfortunately the AIS engineers did not distinguish themselves in this regard. Frustrated in obtaining cooperation to carry out what to us seemed very simple tasks, it was easy to give up and head for home. It is most difficult for Americans to adjust their pace to the slow step of a country not yet convinced that progress, Western style, is wholly desirable. Although only ten technicians were required at any one time, the high mortality rate necessitated the hiring of thirty-six. With an average term of duty of only seven months a good portion of the half million dollars spent on salaries, subsistence and travel was wasted on those who did not remain long enough to make a significant contribution.



A research center is established complete with laboratory. Author in left background.

UNDERDEVELOPED countries seem to have one thing in common—all of them, outside of their Westernized cities, offer less of the creature comforts than we have come to accept as minimum necessities. Recent advertising notwithstanding, the Coca-Cola stand has not penetrated to the remotest village. We had to adjust to totally different foods and to a climate which always seemed hostile. It was, of course, possible to emeliorate some of the harshness of the new situation by importing along with personal belongings those small items which could create comfort and a touch of home. However, the reputation the British had in the past for carrying customs of dinner dress to the very outposts of empire is an extreme which, if projected too far, will more surely alienate fellow workers and newly made friends than can be warranted by the comfort afforded.

A semi-modern foundry; the first to turn out a machinable casting.

Meet the Author . . .

The *American Engineer* feels fortunate in having secured Mr. Stepanek's first-hand review of Point 4 in action, and in a country as news-worthy as China. Engineer Stepanek (B.S. and Eng.D. in Chemical Engineering; U. of Colo., and Yale) is presently Associate Professor of Chemical Engineering and Research Engineer, Industrial Research Institute, U. of Denver. While in China—1947-49—he was Associate Director, Agricultural Industry Service, Shaoyang, Hunan, China. The Service was established by UNRRA and later maintained by the Board of Trustees for Rehabilitation Affairs.

Engineer Stepanek left China in September, 1949, with the boom of the Communist Army's guns in his ears. "During the last six months (April-Sept., '49) our activities were curtailed by the enveloping civil war," he relates. "Shaoyang was bombed heavily during August, the base was looted of all motor vehicles by the retreating armies, but we were able to save most of the other equipment. At last word, operations were being continued on a reduced scale."

Engineer Stepanek is married and the father of three children. One of the Stepanek's children was born in China.

A second problem which we had to face from the outset was the inefficient, archaic, family-style administration which the imported engineer is not prepared to deal and which can and did frustrate so many of our eager, enthusiastic men. In the course of its three years, Agricultural Industry Service had four Directors, all Western trained Chinese, and five American Associate Directors, before a working organization was formed. Advance in administrative efficiency came in stages with each successive new appointment. The first Director had been granted his post as a political reward from a government preoccupied in waging civil war and not interested in rural reconstruction behind the lines. He filled it in the traditional manner with twelve of his relatives immediately finding their way to the top administrative positions. Even the coolies were later found to have been hired on the basis of blood relationship, and it hardly needs be said that the staff treasurer often confused his duties to his family with those to the organization. Under this administrative formula the technicians were not of the highest caliber, as it is impossible that one man could have, within his family, a sufficient number of qualified personnel. A closed family system makes inevitable an inefficient organization as no one can be fired lest it mean the breaking of a cousin's rice bowl, and any incentive to work is lacking.

AMERICANS usually react violently to such conditions forgetting that the family type organization is no less characteristic of Chinese society than the joint stock company is of our Western capitalistic economy. In all probability this man would not have been able to study in America at all had not the entire family pooled its savings to send him, the favored son, across the Pacific. In him they gambled the economic future of the clan and he was duty bound to repay their trust.

That changes can be made in China, however, was demonstrated upon the appointment of a second, third and finally the last Director, a man also trained in the United States. He brought to his job not only Western technology but a Western sense of personal integrity and an undivided loyalty to the organization. Under his guidance the staff meetings became genuinely democratic and not merely a gathering of the clan or a session for pronouncements of policy handed down from the top. For the first time opinions could be expressed and conflicts aired. Representatives of every branch of the organization sat at the meetings including even the formerly unconsulted coolies. At last, after more than two years of administrative turmoil, there was brought into being an organization in which Western technicians could cooperate wholeheartedly. The East with the help of the Western staff had made its first major adjustment.

WITH personal adjustments in balance, and a staff administered on a sound business basis, the American engi-

(*Continued on page* 30)

Relative importance of man and machine differs in an area offering coolie labor at ten dollars per month.

the engineering profession is at the BIFOCAL STAGE

By
Clarence T. Shoch
President, Pennsylvania Society

WORKERS on professional matters in engineering face several major obstacles. Of importance among them are: the problem of understanding what is meant by "professional matters," how these matters relate to the technical phases of engineering work, and how to get this understanding across to others in a manner that will encourage them to take further desired action. Well, you say, that might be all right for organizational objectives, but why should I, personally, help to develop the engineering profession? The answer to that question calls first for some generalization, before going into specific reasons.

It's true that many of us do the things we do, are what we are, or hope to be something better, or different, without stopping along the way to analyze the reason for our particular interests, or of our philosophy for living, or for our desire for improving our lots in the future. If we don't take time to search our minds, catalogue our desires, review our methods and improve upon our motives, we cannot hope to make the most of our personal situations. Correspondingly, if we don't take the same sort of look or insight into what makes our particular situation of interest to us, we cannot hope to be most effective in persuading others that they have similar guiding circumstances.

With these thoughts in mind the following reasons have been developed as to why I am (and under like conditions perhaps you should be) interested in advancing the Engineering Profession to the highest possible plane in society, thereby improving the lot of engineers everywhere in matters of economic advancement, social acceptance, and political prestige. (Any personal reference in the following reasons is only incidental to the purpose of reminding others that perhaps they, too, "have similar guiding circumstances.")

1. *Human Nature to Defend Judgment*

I selected engineering as a career. The choice was mine among the many occupations or careers available to me. Like any choice of a personal nature, whether it be in the matter of an automobile that runs only occasionally, won't go up-hill, uses too much gas, etc., it was my choice, and although it may bring me many headaches and disappointments, when I am talking to others I feel called upon to defend my profession, just as I do my automobile. This matter of defending one's judgment is the initial justification for us to get on our feet to uphold the Engineering Profession, perhaps even to brag about it occasionally. Having selected it, our judgment is at stake.

2. *Investment in Engineering*

I have been in engineering all my working life. My education, experience, know-how, occupational friends and acquaintances, have all been gained at considerable cost and by much effort. Naturally all of this investment of money and time in a profession justifies the expenditure of nominal additional amounts of both to make secure all of these advantages that have been gained along the way.

3. *Engineering Profession Should be Made Strong*

I have a son who is about to enter the Engineering Profession. I want to be sure there is a continuing good future for the profession so that my children, and my friends' children shall not be disappointed if it is their desires to become engineers.

4. *Pride in Profession*

I have a basic pride in my profession—not only because of the interesting and challenging character of the work, but also because of the common honesty, sincerity, integrity and purposefulness of those engaged in it.

We don't like to see the profession kicked around: as, for example, during and prior to the Wagner Act when for recognition purposes the engineer might just as well have been a ditch digger; or during the recent war when many of our learned, useful men were drafted as buck privates. Not that there is anything in the world wrong with being a buck private. But in an engineering accomplishment of the magnitude of World War II, it just seemed a waste of good manpower not to place engineers in responsible positions.

5. *Work With Young People*

All of us know how often we have wondered whether

we were on the right track. Should we study this or that, work for Company A, Company B, or ourselves; become registered or pass it up. Fortunately we have had the invaluable advice of men well established in the profession. We want to be the same sort of help to others in need of guidance.

6. *Engineering Profession can be of Community Service*
   Especially can we be helpful in public life. Our education, training, experience and general business viewpoint are badly needed in the administration of natural resources, public works, the school system and the complexities of city transportation and traffic.
7. *Engineering Profession Should Pay Commensurate Wage*
   There is no question but that the ability of many people to earn a livelihood, and to do so in safety is the result of Engineering achievements. Others depend on our works for the comforts and conveniences of a machine age. That our people enjoy good health generally, is largely attributable to the engineer. Our worth to the economy of the land justifies top consideration in the salary scales.
8. *Practitioners Should be Properly Qualified*
   Many instances are recorded where lives have been lost or placed in jeopardy by the acts of unqualified "engineers" or where mal-practices in the profession have brought it into disrepute. These we want to control.

I HAVE no doubt that you can add to this list from your personal situation or experience. However, a realization of our interests is not enough. We must find some way of focusing attention on them and cultivating them into a program of action. Let's do this by drawing a simple parallel between our engineering interests and our visual problems which are commonplace.

The Bifocal Comparison

Many of us have reached the bifocal stage in matters pertaining to vision. We know that the application of a corrective lens to eyesight made less acute by the close scrutiny of our many daily tasks has restored to us, or perhaps given us for the first time, a clearer view of the close-up work or the work near at hand. In addition, we have been fitted with a lens that gives us a keener perception of items or matters viewed in the distance, or in an overall manner.

As we grow older in engineering matters we find, too, that our recognition or appreciation of the day-to-day, close-up type of problems becomes somewhat blurred by the confusion of contradicting statements, methods and developments from the technical standpoint. We need what might be called "visionary correction" to bring these "engineering close-ups" into sharper focus. These close-ups are the kinds of problems we find at the design board, consulting with clients, making surveys and reports, or any others of the hundreds of ways in which we apply our engineering education, training and experience in an effort to earn a personal livelihood. They are brought into sharper focus for us by the Engineering Schools and the Technical Societies which increase the technical "know how" of engineers and promote developments in Engineering which make the work of Engineers more skilled, more craftsmanlike, more necessary to a well-prepared or turned-out project—the "lower lens" of our Engineering bifocal, so to speak.

THE "near sighted" engineers, who have acquired fine definition of the *details* of their jobs, need, in far too many cases, a means of opening their eyes to or sharpening their vision of the things they can do to help *all* engineers. The corrective lens in this case, the upper lens of our engineering bifocal, is the Professional Society, which helps toward full realization of common problems, points the way of correction and encourages concerted action; the kinds of problems that deal with social recognition of the value of engineering, political inequities, ethical practices, fee and salary schedules, employer-employee relations, and so on.

Just as the near-sighted need visual correction to see the overall problems of engineering, so do those presently "far-sighted" engineers who see the overall picture well

(*Continued on page* 32)

This Vultee Aircraft engineer served his country and his profession well during World War II. Many engineers, however, were not in the responsible positions they should havebeen.

Once the hole is dug, it becomes the center of all activity, as demonstrated by these Seabee Reservists who are cooking a meal over a mountain stove as part of the training they received at Camp Hale, Colorado. Left to right: Donald L. Howell, MM3; Glen P. Miller, MML3; and Lt. R. L. Rupley, CEC, USNR, all of Lima, Ohio. Lt. Rupley is engineer and superintendent for the Peterson Construction Co. of Wapkoneta, Ohio and is a member of the Ohio Society of Professional Engineers, National Society of Professional Engineers.

Here's A Little January In June . . .

SAILOR IT'S COLD OUTSIDE

FOR fifty weeks of the year, members of the Organized Construction Battalion Companies of the United States Naval Reserve carry on their regular civilian careers, but for the other two weeks, they are real Seabees on active duty.

This year more than 650 Seabee Reservists, many of whom are professional engineers (see picture captions), "joined the Army" and took "ski duty" with the Winter Training Detachment of the 14th Regimental Combat Team at Camp Hale, Colorado. This training of the Seabees took place during three two-week periods in January, February and March.

Coming from the 8th, 9th, 11th, 12th and 13th Naval Districts, which include all the States west of the Mississippi River, the Seabees donned regulation GI winter clothing and sloughed around on skis and snowshoes under the tutelage of expert Army and civilian instructors.

Although many of the men had never experienced snow and cold to such extremes as was experienced at Camp Hale, they soon adapted themselves and kept right up with the training program.

Commencing with basic instruction on dry, straw-covered drill fields at Camp Carson, Colorado, the training was continued at Camp Hale. Camp Carson is the headquarters of the 14th Regimental Combat Teams of the 5th Army and is the parent camp to Camp Hale.

The trips to Camp Hale were made by truck convoys and training got underway almost from the moment of arrival.

The steps from the straw-covered fields at Camp Carson to the snow-covered slopes at Camp Hale proved bigger to some Seabees than the 156 miles distance and 5,000 additional feet altitude might indicate. Skilled though they were in handicrafts and trades requiring deft use of the hands, a number of the men felt they had suddenly become owners of two overlarge left feet when it came to managing the skis and snowshoes. However, with the assistance of the instructors they were soon convinced that the training could be fun as well as educational.

MEN who regularly climbed tall ladders, walked nonchalantly along slim girders hundreds of feet in the air and balanced long timbers in high winds paled somewhat as they looked down from the tops of snow covered ski-slopes and judged their chances of safe arrival at the bottom, dependent only upon a pair of slim upturned pieces of wood and a couple of metal tipped poles. However, a few days and many comparatively harmless falls later, these men, whose motto is "Can Do," became quite competent in the use of skis and looked for other challenges. They found them, on snowshoes, and after several

Pfc. Lester J. Guidry, (left), of Lafayette, Louisiana, instructor-cadreman with the 14th Regimental Combat Team, Winter Training Detachment, at Camp Hale, Colorado, shows Navy Lt. R. L. Rupley, CEC, USNR, Lima, Ohio, the technique of using a snowshoe to dig a shelter if suddenly overtaken by a snow storm or darkness while on a reconnoitering trip. Lt. R. L. Rupley, CEC, USNR, is a member of the Ohio Society of Professional Engineers, National Society of Professional Engineers. ***(Department of Defense Photos)***

miles of muscle-tiring and lung-straining cross-country hiking, declared themselves adequately experienced snowshoers.

Anticipating the possibility of future need for a general understanding of Arctic conditions and how to combat them, the Seabees received first hand information and instruction on survival, personal hygiene and First Aid.

Test Program

The only part of the training which served to remind the Seabee Reservists of their everyday life was their observation of the limited cold-weather test program conducted under the auspices of the Bureau of Yards and Docks on road building and construction equipment. Regular Seabees from Pt. Hueneme, California, conducted the tests which had originally been scheduled for the Antarctic on Operation Highjump II. These tests included studies on snow compaction and road building equipment, efficiency of various starting systems, the effectiveness of lubricants and fuels and several Arctic-type shelters.

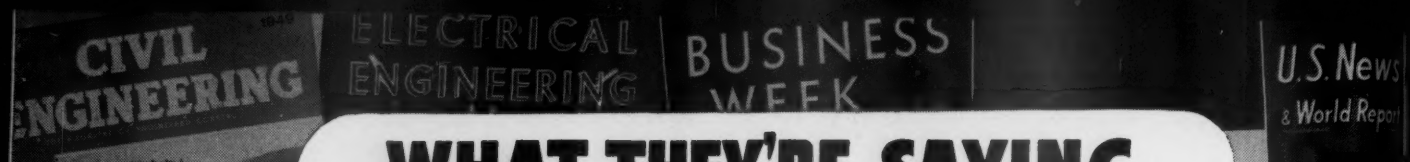
The matter of cold-weather clothing was another perplexing problem the Reservists had to overcome. Starting with nine-pound-per-pair ski boots, triple layers of heavy wool sox and "long handled" underwear, the Seabees kept right on adding layer upon layer of clothing until approximately 30 pounds had been added to their own weight. This additional poundage became increasingly burdensome as the men continued their training in the rarefied air and as the sun and temperatures rose in mid-morning. By dinnertime it appeared as though the camp name had been changed to "Seabee Sun Valley," as most of the men had long since removed the heavy parkas and jackets which had been necessary earlier.

THE final feature of each training period was a ski march to an overnight bivouac area where the men learned some of the methods of picking a camp site, preparing the bivouac, and fire-building and outdoor cooking. This proved a little more in line for the Seabees who, as the Navy's builders, established a wartime reputation for ingenuity and accomplishing their aims despite numerous and apparently overwhelming obstacles. During the training periods the obstacles were snow, wind, cold and high altitudes.

Following the overnight bivouac the Reservists repacked their duffle and sleeping bags and returned to Camp Carson from where they returned to their 50-week-a-year civilian routines.

However, those Reservists who attended the January session experienced an exceedingly unwelcome obstacle. A devastating fire which broke out on nearby Cheyenne Mountain swept into Camp Carson on winds which reached 90 miles per hour. Regular Army personnel and Seabee Reservists joined forces in fighting the blaze which lasted 36 hours and resulted in considerable loss of equipment.

The entire maneuver was marked by the excellent cooperation and coordination of plans and procedures between the Army and Navy in this first major joint winter-training program.



HUMAN RELATIONS . . .

Young engineers have a disconcerting knowledge of many things that older engineers have forgotten. However, there are compensations for growing older in the engineering business. As the hard, bright facts of formal education begin to dull with time, we begin to develop a better understanding of human relationships and the ways and means of translating knowledge and ability into effective action. We learn that many phases of engineering have more to do with psychology than mathematics, and that quite often a slide rule can be of far less value than a sense of humor.

Engineers experience a feeling of frustration when all too often they come off second best in their encounters with salesmen and politicians. The story has been told of a politician and an engineer, who after discussing some project of mutual interest, left the office of the engineer and went to his club for luncheon. As they entered the club they met a gentleman just leaving. The politician greeted him warmly and shook hands with him. As the politician rejoined the engineer, he said, "Don't you know Mr. So-and-So?" The engineer replied, "Yes, I know him." The politician said, "I didn't see you speak to him," to which the engineer answered, "He knows that I know him so why should I speak to him?"

Another important point is the tendency of young engineers to seek economic security at almost any sacrifice. Not long ago, the Bureau made a survey of senior engineering students in college to determine what they considered the most important inducement in a job opening. The majority wanted job security. Almost as many were interested primarily in salary. And close to the bottom on the survey were those few who wanted only the opportunity to develop professionally. A young man's desire for security is easy to understand, but security should not be sought for its own sake. It should come as the result of ambition, enthusiasm and hard work.

Another suggestion concerns the importance of speaking and writing effectively. Last year, because of the importance I attach to these abilities, I authorized groups of my coworkers to attend weekly classes in public speaking. The result was surprising. Men whose personal courage had never been in doubt and whose coats were covered with campaign ribbons and battle stars, had the look of boot sailors under fire for the first time. And the instructor informed me that they certainly must be good engineers because, with a couple of exceptions, they were the world's worst public speakers.

My advice to the young engineer is, in brief, to go beyond the narrow horizon of his technical training to the broader horizon of usefulness and influence in his community. If the young engineer recognizes that his fellow men can offer him as much as he can offer them, and that humility offers a faster road to success than pride and intolerance, he will reap rich satisfactions both as an engineer and as a citizen.—*Vice Admiral John J. Manning in Civil Engineering, April*, 1950.

ENGINEERS AND NATURAL RESOURCES . . .

The science of engineering is an ancient science, which has been applied to the advancement of men and nations since the dawn of history. It is significant, however, that engineering has been steadily accelerated, and that accomplishments of the profession during the last 50 years have been as great or greater than the accomplishments recorded during all time prior to the turn of the century.

It is a fundamental engineering precept that waste should be reduced to an absolute minimum, and that efficiency should be increased. As the population of the world expands, and as our lines of communication shrink, this precept is looming ever larger and more important upon the world horizon.

What discoveries remain to be made in the way of untapped natural resources undoubtedly will be made through the application of engineering principles. The broad question, however, is whether these discoveries can keep pace with the growth of world population and with the increasing demand for higher living standards throughout the world.

Perhaps not during our lifetimes, but ultimately, the world must face the fact its people must make their known resources produce and reproduce in sufficient quantity and quality to maintain high living standards, or the human race must experience retrogression and want. The latter already is a seasonal experience in some countries.

The science of engineering must play an increasingly important role in making the most of what we have. Certainly the progress already made in this field is most encouraging.

In its volume entitled "Research, A National Resource," the National Resources Planning Board points out that as recently as 1920 only 25 percent of our crude oil could ultimately be used as gasoline, but that through the efforts of engineers the portion of crude now convertible to gasoline is 65 percent.

In agriculture again, the engineer has made, and is still making, his mark of progress. We are engaged in an endless battle against erosion. The loss of our thin layer to topsoil constitutes a frightening problem involving our most fundamental human need—the need for food.

Upon this thin layer of topsoil depends the food supply of the world. The conservation of this thin layer is necessary if life is to be maintained upon this planet.

Engineering is expanding in another field of conservation that holds great promise. The idea is an old one, but the demands of war focused the attention of the nation on it. It is the substitution of more plentiful materials for the scarce ones, the cheaper for the more expensive, and the development of new materials and processes in many fields.

Obvious examples, of course, are synthetic rubber in place of natural rubber, nylon for silk, and plastics for wood and metal.

Yet in spite of this, the strains of modern civilization continue to take a steadily mounting toll.

The recognition by Oklahoma engineers of their responsibility for conserving all resources—human, eco-

nomic, and social as well as natural resources—gives evidence of a growing professional maturity.

This task of conserving our varied resources, it seems to me, offers a continuing challenge to your profession, for the greatest contributions to this field are probably still to be made.

The development of more and larger industries, making use of our state's natural resources and the development and utilization of our abundant labor supply is a worthy challenge to the skill and abilities of Oklahoma engineers.—*Gov. Roy J. Turner of Okla., in The Oklahoma Professional Engineer—April,* 1950.

GOVERNMENT RELATIONS . . .

The average government official of this generation is well educated, intelligent, honest, and is doing his best to satisfy the people who elected him. Therefore, the best approach for the executive contacting them is the direct one, assuming that the official wants the facts, and presuming that the executive is seeking only that which is fair and in the public interest.

Under the heading of local government relations, we place city, county, and state relations. The association executive should have a well-established procedure for keeping informed regarding action by such local governments as to matters affecting his members.

Often possible difficulties can be avoided if the government officials are well informed as to the proper interests of the association members. The executive and the members of any local trade association should personally know the governing officials. Their understanding of the purposes of the association is important.

The same course of conduct applies to county officials, or those of a township.

If the association operates as a statewide organization, it is advisable to know the Governor, members of the General Assembly, and the other state officials. They should be well informed of the purposes of the association and of the proper interests of its members. The executive should have a plan for keeping posted regarding legislative proposals at the state level.

At the national level the association executive of a national organization will have contacts with the executive and legislative branches of the federal government. He should have a system of keeping informed of legislative proposals and of executive orders and departmental rulings. His membership will want this information promptly.

If the association represents a particular industry, the executive will want to become personally acquainted with the member of the Congress serving on the committee handling legislation of most interest to the industry. Often several committees will have jurisdiction of matters affecting the industry. The executive must establish himself in the confidence of members of each of these committees, that is, he must become so well known to them that they have faith in what he tells them.

Lobbying, openly and properly done, is nothing to be ashamed of. It is a part of our Constitutional right of petition. If done on a high level of frankness and ethics, it is a help to the legislators. They welcome factual information regarding the effect of proposed legislation upon the legitimate interests of their constituents.

Trade association executives will find the officials of the executive branch desirous of being helpful also. They also want facts, and here again. it is best to leave a written statement for reference. It is best to contact the highest possible official in the department or agency involved, at first. then follow up with the lesser officials who generally handle the details of agency action.

It must be remembered that government officials cannot operate with the same freedom exercised by business executives. Decisions must be considered by various levels of authority, and often more than one agency or department is involved. Before action results, the matter must be cleared by all those involved. No one has yet found a way to eliminate what we call "red tape" in the government. It often works to the advantage of the trade association, because it is a protection against hasty action.—*Robert Ramspeck in the April,* 1950, *American Trade Assoc. Executives Journal.*

LEISURE TIME . . .

Effective use of leisure time is one of the most important day-by-day decisions which we as junior engineers have to make. The value of our leisure time presents a striking contrast with our vocational hours. Our time is of relatively low value to our employer when we first start working, but it increases, if we are on our toes, as experience increases.

Let us consider briefly some of the activities which demand our leisure time. I will take the liberty of presenting some personal views with which you may find reasonable disagreement but which may help you to come to some personal decisions. I would classify leisure-time activities under three headings: recreation, intellectual development, and social development.

As young engineers we must be careful to give proper attention to our intellectual development lest we become too narrow to handle adequately a position for which we might be considered. This includes professional development, which may take the forms of (1) extension courses at night or correspondence schools; (2) technical reading on the more advanced fringes of our professional work in texts and scientific magazines; and (3) preparation of papers for submission at technical meetings.

The demands of social development secure inadequate attention from many engineers. This complicated world has gained much in material things but the most important element in its continued existence is how we as individuals and nations get along. Our material development has been possible only because a social system is in existence which provides the means for specialization and cooperation. There are indications that our social development is more gradual than the rapid expansion of scientific and engineering knowledge and for stability, must be accelerated to keep pace. For example, recently the whole country suffered because of a costly disagreement in the steel industry. A more enlightened and co-operative social philosophy would indicate that both industry and labor have a responsibility to the country which gives them their business and their jobs and that more can be gained by both when they work to improve the efficiency of the whole steelmaking operation. Also, we must realize that our own self-interest demands that large variation in standards of living both in our own country and in the world should be avoided because such conditions lead to hatred and violence, and eventually to war, waste, and degradation for all. Our forefathers have left for our use a wonderful heritage — consider the schools and colleges, the wealth of literature, the public buildings and hospitals, the mechanical plant, and the transportation systems. We have no right to settle back and take these for granted but must do our part to add some for our successors and to make them available to our neighbors.—*By F. Everett Reed, member, National Junior Committee, ASME. —Mechanical Engineering, April,* 1950.

TO THE *Editor...*

Cooke: Right Or Wrong?

Dear Editor:

The enormous gap between personal success for a distinguished and able technical man in public life, and understanding of even the simple fundamentals of social and political evolution on which that success must have been based, empirically could not have been better illustrated than by our greatly admired fellow citizen and engineer, Morris Cooke, in his suggestions (AMERICAN ENGINEER, April, 1950) for importing more and better technology into the political and social scene...

Basically, of course, the reason we have so little technical ability applied to political and social problems, is not that the engineer is incompetent to apply them, which is Mr. Cooke's number one thesis. The reason goes much deeper. The engineer and technician are, as a matter of fact, preferred and advanced types as citizens "going in." They already know, contrary to Mr. Cooke's beliefs, much more of cooperation in production and management than the average person. They may even know more of these matters than the average lawyer...

This knowledge cannot be applied to present day political problems not, as Mr. Cook supposes, because the engineer has not been taught in a four year college course "how to ring doorbells," but because of a much more fundamental fact. The public, the average voter, on whose state of intelligence and on whose demands for political service or political success must be based, is as yet quite ignorant, not merely of engineering and production matters, but even of the simple fact that the engineer is able to do a great deal for the public by way of reducing the cost of government, raising the level of service, and improving the whole quality of public life...

The plain unvarnished fact of the matter is that among our leaders of highest intelligences, there is constantly being shown a mental lack of public sense whatever. Never mind educating engineers about shaking hands. You have to educate the financier that crime does not pay, and the lawyer that it does not work to buy or sell justice, either.

It is a very good thing to teach all college men, let alone engineers, increase social consciousness, and increased know-how about assuming their fair share of political and social life. It is quite fatuous to suppose that this, however, will by the remotest possibility result in the engineer overturning the political order in producing better government like a rabbit out of a hat.

The politician is necessary, and extremely important cog in any democracy. No engineer is going to supplant him. He integrates the general level of intelligence into some sort of order and progress. If that intelligence is as far below the engineering level as it most obviously is, then, most obviously, those political accomplishments too must remain below the level of technical standards. When the public comprehension of cooperation and its benefits to all has improved to the engineering level, we do not need to worry about the competence of our politicians to express that fact. With the help of the engineer, where he is required, they will express it exactly and fully. Meanwhile, to suggest that the engineer throw overboard all his advance on the herd to start ringing doorbells and playing politics is a sheer waste of good material and good educational effort. He could never be anything but just another politician, and might do much worse.

HENRY D. HAMMOND,
New York County Chapter,
NYSSPE,
New York City

Dear Editor:

I am delighted with the philosophy and ideas expressed by Mr. Morris Cooke in the April issue of the AMERICAN ENGINEER. There cannot be too many articles of this nature, for the engineering world must be awakened to its larger responsibilities.

GEORGE W. CARTER,
College of Engineering,
University of Utah

ASCE Report

Dear Editor:

My attention has been called to an article, "The Salary Problem," in the March issue of the AMERICAN ENGINEER. The article is an extract from "Mountain Constructor" of January, 1950.

The author of the quoted article referred to a report on salaries published by the American Society of Civil Engineers. The salaries quoted, however, were from an ASCE recommended classification and compensation plan adopted in 1944 which was superseded by a very different interim classification and compensation plan adopted in October, 1946. The 1946 report (our latest) will be reviewed by the ASCE committee on salaries at its meeting in June with a view to possible further revisions.

ALLEN P. RICHMOND,
Personnel Officer,
ASCE,
New York, New York

Must Reading...

Dear Editor:

This is written to call your attention to an article which appeared in the May 1950 issue of "Product Engineering" magazine, which article should be of interest to all of our society members and to all engineers.

The article is entitled "The Chief Engineer—His Status and Responsibilities," and was written by Arthur Lazarus. I think it has general interest among engineers because more of us are employed by industrial concerns than are in private practice, and this article deals especially with the status and prospects of engineers in industry.

WALKER JONES,
Texas SPE,
Borger, Texas

Education Issue...

Dear Editor:

Congratulations on your excellent Education Issue (May, 1950). The articles were well selected...

ROGER B. EVANS,
Chicago, Ill.

Dear Editor:

Education is a subject well worth devoting an entire issue of the AMERICAN ENGINEER to. I enjoyed the Hollister piece very much...

CARL C. BLEAVANS,
San Francisco, Calif.

LEGISLATIVE REPORT

The long-awaited Supreme Court decision in the Real Estate Case which, it was hoped, would give the engineering profession a definite guide as to the legal status of schedules of minimum fees in relation to the antitrust laws, has been rendered—the result is a set of clues, but no definite answers.

It will be recalled that the government filed both a criminal and a civil action against the national and a local real estate board for combining and conspiring to fix the commission rates for services in the sale of realty. The District Court dismissed both suits holding that the antitrust law does not apply to personal services. The government appealed the civil case to the Supreme Court. (For a discussion of the District Court holding see the American Engineer, August, 1949, page 15.)

By a vote of 6 to 1 the Supreme Court has reversed the decision of the District Court and ruled that a combination to fix the price or compensation for personal services is within the prohibition of the antitrust law. The majority decision revolves primarily about the interpretation of the word "trade" in the antitrust law and whether personal service of individuals or firms falls within that term. The following language of the majority is of interest in applying the decision to individual engineers and firms: "Members of the Washington Board are entrepreneurs. Some are individual proprietors; others are banks or corporations. Some may have no employees; others have large staffs. But each is in business on his own. The fact that the business involves the sale of personal services rather than commodities does not take it out of the category of 'trade' within the meaning of Section 3 of the Act. The Act was aimed at combinations organized and directed to control of the market by suppression of competition 'in the marketing of goods and services.' " (Emphasis Added)

The Court held that the fact that no interstate commerce was involved in the Washington Real Estate Board case was not a barrier to the suit. It was pointed out that the Sherman Act is operative to conduct purely local to the District of Columbia, in addition to operations in interstate commerce.

The second clue, however, puts the application of the holding to the engineering profession in considerable doubt. Developing their reasoning on the interpretation of the word, "trade," the majority quotes approvingly an opinion by the famed Justice Story in The Schooner Nymph Case, the pertinent portion of which reads:

"Wherever any occupation, employment, or business is carried on for the purpose of profit, or gain, or a livelihood, not in the liberal arts or in the learned professions, it is constantly called a trade." (Emphasis Added)

The Supreme Court opinion then points out that the Court of Appeals for the District of Columbia had held in an antitrust case against the American Medical Association that the "procurement of medical and hospital services" was included in "the range of business activities that have been held to be covered by the Act."

With these conflicting views on the record the Supreme Court left the issue of the application of the antitrust law to professions to the future, stating: "We do not intimate an opinion on the correctness of the application of the term to the professions." Having disposed of this problem by leaving it hanging in the air the majority stated that they decline to carve out an exemption for real estate brokers.

In his dissent, which is not controlling, Justice Jackson complains that if real estate brokerage is to be distinguished from the professions or from other labor that is permitted to organize the Court does not impart any standards for so doing. "It is certain that those rendering many kinds of service are allowed to combine and fix uniform rates of pay and conditions of service. This is true of all laborers, who may do so within or without unions and whose unions frequently do include owners of establishments that employ others . . ." Justice Jackson then comments, "I suppose this immunity is not confined to those whose labor is manual and is not lost because the labor performed is professional." He states that the real estate broker is perhaps a border-line case, but. . . "I am not persuaded that fixing uniform fees for the broker's labor is more offensive to the antitrust laws than fixing uniform fees for the labor of a lawyer, a doctor, a carpenter, or a plumber."

Both the majority opinion and the dissent make it fairly clear that the antitrust laws do not apply in the case of employees who band together to improve their economic position. This is based on the Clayton Act declaration that "the labor of a human being is not a commodity or article of commerce . . . nor shall such (labor) organizations, or the members thereof, be held or construed to be illegal combinations or conspiracies under the antitrust laws."

Thus the schedules of minimum salaries recommended by many state organizations are in a much clearer position and not open to the doubt surrounding the schedules of minimum fees.

(*Continued on page* 31)

Major General Lewis E. Pick

'Come To Boston' Is The Word As NSPE Prepares For Its ANNUAL MEETING

All roads will lead to Boston the early part of this month when the Massachusetts Society of Professional Engineers plays host to NSPE's 1950 annual meeting.

With a program that boasts such speakers as Major General Lewis E. Pick, U. S. Army Chief of Engineers, professional engineers attending are assured of a full program of activity that combines both business and pleasure.

The business side of the schedule will begin early for the Board of Directors who will meet on Wednesday, June 7—the day preceding the start of regular open sessions.

On Thursday morning the first general session will begin with NSPE President Allen G. Stanford, presiding. This meeting will include the roll call of members, seating of the Directors, reading of minutes of the previous meeting, and the reports of officers. The afternoon gathering is to cover such subjects as status of the AMERICAN ENGINEER, problems of young engineers and the national legislative program for 1950-51.

Friday morning's general sessions will discuss plans for Engineers' Week, awards, employment policies, resolutions, and any unfinished business.

The final business session will be held Saturday morning and will include reports on such topics as status for proposals for coordination of engineers for professional action, professional liability insurance, status of membership, and student activities and education.

A full social calendar has been prepared for the entertainment and relaxation of the engineers and their ladies. The Massachusetts Society of Professional Engineers' annual dinner with all members of NSPE invited, will be held Thursday evening with Edgar A. Harty, president of MSPE, presiding.

On Friday afternoon there will be sight-seeing tours for the engineers and their ladies to historic spots in Boston and the North Shore area. That evening it will be Engineers' Night at the "Pops" concert, at Symphony Hall.

Festivities will end Saturday evening with NSPE's annual banquet at the Hotel Statler. Dinner and entertainment will be followed by dancing.

Those who can remain in the New England area after the annual meeting, will find literally hundreds of vacation areas within short distances.

New England contains over 36,000 square miles of vacationland. For those who prefer the sea, there are 2,500 miles of sea coast with a thousand sandy beaches. For hikers and climbers, 4,000 miles of mountain trails offer their challenges. There are hundreds of stopping places available with everything from friendly farmhouses and overnight camps to huge resort hotels.

The entire coastline is dotted with great and small ports that are indeed in contrast to the New England country villages which are an experience in themselves.

A MESSAGE TO ALL MEMBERS OF THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

The National Society of Professional Engineers will hold its annual meeting at the Hotel Statler in Boston, Massachusetts, on June 8, 9, and 10, 1950. An effort has been made to plan an interesting meeting. Inspection of the program should convince you that your attendance at this meeting will be a pleasant one.

Your active participation in NSPE affairs is needed. Decisions directly affecting your professional standing and economic position will be reached at this meeting. You will learn first hand what is being accomplished and what is planned, and you will have an opportunity to express your opinions in person to those directing our Society affairs.

The Massachusetts Society of Professional Engineers as host invites you to participate. We hope our planning effort will produce a meeting that will long be remembered by those who attend. A specially interesting program of entertainment for the Ladies has been provided and they are cordially invited to participate. Plan your vacation at Annual Meeting time and come to Boston in June.

Sincerely yours,
EDGAR A. HARTY, President,
Mass. Society of Prof. Engineers.

Accent on Activity

MEMBERS HAIL NEW PUBLIC RELATIONS NEWS LETTER. Reports from field laud P. R. News Letter Nos. 1 and 2. (Sent to chapter prexy, sec'y; NSPE officials, etc.) First bulletin told how to get more local publicity, included complete radio script for chapter adaptation . . . Number 2 letter gave info on how to spice up meetings; listed gov't. films available to public, etc. **Future letters due about once a month . . . REMINDER:** Legislative Bulletin available free. Now goes to 5,000. **Get your name on list and keep posted . . . TROUBLE** has been experienced by new car owners in trying to fasten NSPE auto placque to car. New universal mounting now being devised to **permit universal use . . . MASS., ILLINOIS, CALIF., KANSAS, AND MISSOURI** are states that have made use of NSPE's offer to print membership-getting brochures for them. **Offer still open to others.**

RESERVATIONS FOR NSPE ANNUAL MEET IN BOSTON, JUNE 8-10, indicate record turnout. Business and social program full of outstanding events. **Examples:** Speech by Maj. Gen. Pick, Army's Chief of Engineers; Engineers' Night at Boston's famous "pops" concert.

LEGISLATION. IMPORTANT: Representative Robert L. Doughton, (D-N. C.) Chairman of House Ways & Means Committee, **has advised NSPE that TAX EQUALIZATION legislation endorsed by professional groups will probably NOT BE INCLUDED** in present tax revisions . . . **NSPE OFFICIALS** have discussed with Defense Department heads Society's position re: interests of professional engineers in National Defense Organization . . . Program of interest to Chapters and State societies involving **COMMERCE DEPT'S.** plans for coordination of technical research problems affecting small business discussed with top officials by **NSPE.**

ACTIVITY IN THE FIELD. Members who are Army engineer reserve officers write Washington office wanting to know how they can be of service **IN NATIONAL DEFENSE PICTURE.** Hq. officials developing ways and means for them to carry out wishes . . . **President-elect Stolte is lining up his team.** Committeemen are being selected for 1950-51 so that plans can be made by each committee for **ACTIVE PROGRAM BEGINNING THIS FALL . . .** Draft of 45 page interim report by Committee on Salaries and Fees now being given final review by Committee. **EARLY PUBLICATION SCHEDULED.**

ACTIVITY AT HQS. Conference with Construction Division Office, Bureau of Yards and Docks held. Talk centered around policies and procedures utilized **IN CONSTRUCTION AND ENGINEERING PROGRAMS** of the Bureau . . . **Veterans Administration contacted re: VA requirements for property surveys of real estate used as security for VA loans . . .** Executive Director represented **NSPE** at recent AIA convention in Washington . . . The second in a series of monthly folders soliciting advertising for **AMERICAN ENGINEER** is on way out to prospective advertisers. Colorful presentations in book form have also gone out to ad representatives to help them sell.

VISITS: NSPE Executive Director Paul Robbins to Annual Meeting New York SSPE in New York, and the Pennsylvania Society's annual confab at New Castle.

Around The Nation With Our Members

Noted Educators Guests of Philadelphia Chapter

Using education as its theme, a highly successful meeting was recently held by the Philadelphia Chapter, Pennsylvania Society of Professional Engineers.

Following a dinner and short business session, R. W. Hoch, Chairman of the Meeting Committee, introduced Dean R. C. Disque, of the Drexel Institute who presented Dean S. C. Hollister, Dean of Engineering and Vice President of Cornell University. After an excellent address by the famous educator, members and guests shared in a thirty-five minute discussion.

Other guests for the evening's activities were Dr. Harvey A. Neville, Chairman of the Executive Committee, School of Engineering, Lehigh University; Dr. Carl C. Chambers, Dean, Moore School of Electrical Engineering, University of Pennsylvania; Dr. John A. Goff, Dean, Towne Scientific School, University of Pennsylvania; Dr. Samuel T. Carpenter, Chairman, Division of Engineering, Swarthmore College; Dr. J. Stanley Morehouse, Dean of Engineering, Villanova College; Dr. Wm. S. Lohr, Engineering Department, Lafayette College.

New Clinton-Essex Chapter Joins NYSSPE

A new Chapter to be known as the Clinton-Essex Chapter, has been formed as part of the New York Society of Professional Engineers.

Registered engineers and land surveyors in the territory have organized a chapter and are now inviting the state society to assist them in completing their plans.

In order to form this group, every registered engineer, land surveyor, EIT, and anyone else qualified to belong to the Society but who has not yet obtained his license, were circularized and urged to join.

Additional meetings of the new group was held in the Faculty Club on Champlain college campus in Plattsburg, New York.

Dayton, O., Chapter Has Full Calendar

Many important dates have been on the Dayton Society, Ohio Society of Professional Engineers, calendar during the past few weeks.

On April 14th there was a membership meeting which included a panel discussion. Members of the panel included Chairman W. Ray Yount, of Community Relations Committee; Chairman Carl B. Avery, of the Employment Conditions Committee; and Professor Willys G. Stanton, Chairman of Employment Conditions Committee, Ohio Society of Professional Engineers.

Other recent activities include: April 20—Board of Directors Meeting, Red Gables Restaurant; May 11—Certificate Presentation Program; May 18—Board of Directors Meeting; and on June 8—Annual Dayton Chapter Picnic.

Nearly 250 Attend Capital Chapter, ISPE, Meet

Nearly 250 engineers and their guests attended a recent meeting of the Capital Chapter, Illinois Society of Professional Engineers, in Springfield, Illinois.

To carry out the theme of promoting better inter-Society relations and to further professional recognition, four other organizations co-sponsored the evening's events. They were: Springfield Engineers Club, Illinois Section D G C A, and local chapters of AIHE and ASCE.

The main speaker of the evening was A. N. Carter, Manager, Associated General Contractors of Americas' Highway Division. Mr. Carter spoke on the subject "The Contracting Industry Studies the Huge Road Construction Job Ahead."

Educator Speaker Before Pa. Engineers

The tenth annual dinner of the Northeast Chapter, Pennsylvania Society of Professional Engineers, will be held in Wilkes-Barre, Pennsylvania, on Saturday, May 13.

Guest speaker at the dinner will be Professor Hale Sutherland, Head of Civil Engineering Department at Lehigh University, and past president of PSPE. Professor Sutherland is widely known for his contributions to the engineering profession as teacher, author and professional engineer.

John T. West, the Executive Secretary of PSPE, will talk to the group on the affairs of the professional engineer in Pennsylvania.

Texans Urge Employment of Qualified Engineers

The Texas Construction Consul, of which the Texas Society of Professional Engineers is a member, has issued a communication to public officials of Texas urging them to make certain that they employ qualified engineers of the profession to design and supervise the particular type of public job contemplated for construction.

Besides the Texas Society, the Consul includes the League of Texas Municipalities, Texas Society of Architects and Municipal Contractors Association, and Texas Chapter of Associated General Contractors of America.

Ohio SPE Begins State-wide Radio Broadcasts

The Ohio Society of Professional Engineers is sponsoring a series of weekly broadcasts in the Mahoning Valley area over station WFMJ. The first program was heard Saturday, May 6.

The broadcasts are part of a statewide program of radio broadcasts under the direction of the Ohio Society. The broadcast, entitled "The Voice of the Engineer," will serve to tell the general public about the engineering profession and its accomplishments.

In a card sent to its membership, the Mahoning Valley Chapter is backing the program by asking all members to advertise the broadcasts whenever possible.

Here is a photo taken during the 1st Annual Meeting of the Arizona Society of Professional Engineers held recently at Phoenix. Left to Right, Speakers table, noon luncheon: Walter A. Burg, President, Central Arizona Chapter; William D. Williams, President, Arizona Society of Professional Engineers; R. I. C. Manning, Vice-Pres. Arizona Society of Professional Engineers; Nicholas Udall, Mayor of Phoenix. (Guest of honor welcoming members to Phoenix); Walter H. Croft, Past President, Arizona Society of Professional Engineers; L. L. Dresser, Vice-President, National Society of Professional Engineers (Keynote Speaker for Meeting); Harold W. Yost, Secretary, Arizona Society of Professional Engineers; and G. W. Irvin, Vice-President, Southern Arizona Chapter.

Arizona SPE Holds First Annual Meeting

The First Annual Meeting of the Arizona Society of Professional Engineers was held in Phoenix recently. The morning business session was followed by a luncheon at which Mayor Nicholas Udall gave the welcoming address and keynote speaker L. L. Dresser, Vice-President of the NSPE, inspired the entire attendance with "Building Credit Through Community Service."

The new officers were installed at the afternoon session which was climaxed by a western dinner-dance where Governor Dan E. Garvey gave a talk on his association with engineers. This First Annual Meeting was very inspiring to those in attendance and the outlook is for a very successful year for the Arizona Society.

Manz Before Mich. Group

At a recent meeting of the Grande Valley Chapter, Michigan Society of Professional Engineers, Glenn Manz, City Engineer and Director of Public Service, City of Lansing, Michigan, spoke on public improvement planning for the city of Lansing.

The address tied in with a planning program on highway and traffic relief which is being sponsored by this Chapter in cooperation with local Planning Groups.

The Grand Valley Chapter, now only four years old, boasts nearly one hundred members.

Los Angeles Members Hear Air, Radar Discussed

An outstanding program that covered the subjects of aviation and radar was recently held by the Los Angeles Chapter, California Society of Professional Engineers.

The principal speaker was Gene May, test pilot, Douglas Aircraft Company, Inc., who discussed "High Speed Flying." Following the talk, Dr. Frederick M. Weil, member of CSPE, discussed "Ground Control Approach by Radar."

Rounding out the evening's entertainment were films on new radar systems and operations.

Arizona Board Holds Session at Phoenix

The Board of Directors of the Arizona Society of Professional Engineers met in Phoenix, Arizona recently to discuss future activities.

Considerable discussion was held on the subject of the Engineer in training and the registration law. Communications were referred to the Registration Committee for further study and possible discussion with the state board of technical registration. The appointment of the advisory committee was deferred for the present, but a general committee composed of the Chairmen of the various committees was proposed as a interim step.

The next Board meeting will be held in Phoenix on June 30, 1950.

Bullen New Calif. Executive Secretary

The California Society of Professional Engineers has announced the appointment of Arthur C. Bullen, of Delrosa, California, as the new State Executive Secretary.

Mr. Bullen is a charter member of the Los Angeles Chapter.

Ex. Pres. Van Praag Addresses Marylanders

Alec Van Praag, past president of the NSPE, was the principal speaker at a recent meeting of the Maryland Society of Professional Engineers.

The meeting, held in Baltimore, included dinner and cocktails.

Mr. Van Praag discussed "Relationship of Society of Professional Engineers to Founder Societies." An interesting question and answer period followed the excellent talk by the past NSPE official.

Talk, Panel Discussion, Highlight Ohio Meet

"The Engineer in Industry," was the subject of a talk by Mr. Joseph H. Nuffer, President, Airway Electric Corporation, before a recent meeting of the Toledo Chapter, Ohio Society of Professional Engineers.

The speech was followed by a continuation of the panel discussion initiated at the January meeting on the subject Engineers in Industry.

In the photo on the left: left to right: Robert C. Read, Executive Secretary, N. Y. State Soc. of Prof. Engrs.; Frank J. Doerhoefer, P. E., Secretary, Tri-County Chapter; F. Ray Williams, P. E., Vice-Pres., Tri-County Chapter; Ernest L. H. Meyer, P. E., President, Tri-County Chapter; George J. Nicastro, P. E., President, N. Y. State Soc. of Prof. Engrs.; and Carl L. Zamjohn, P. E., Zone Director, N. Y. State Soc. of Prof. Engrs. In the picture on the right are shown, left to right, front row: Frank J. Saerhaefer, P. E., Secretary, Tri-County Chapter; George J. Nicastro, P. E., President, N. Y. State Soc. of Prof. Engrs.; Ernest L. H. Meyer, P. E., President, Tri-County Chapter; Carl L. Zamjohn, P. E., Zone Director, N. Y. State Soc. of Prof. Engrs. Back row: John M. Lewis, P. E., Membership chairman, Tri-County Chapter; F. Roy Williams, P. E., Vice-Pres., Tri-County Chapter; and Robert C. Read, Executive Secretary, N. Y. State Soc. of Prof. Engrs.

Tri-County Chapter-NYSSPE Hold Membership Booster Meet

A very successful Booster Meeting was held in the Queensbury Hotel, Glens Falls, New York, recently by the Tri-County Chapter, NYSSPE.

The details of these special meetings were ironed out during the winter months by the Dutchess and Clinton-Essex Chapters and the members of the Executive Committee, NYSSPE. The Tri-County meeting was the fifth such meeting to be held in the state.

Primarily, the objective of the Membership Booster Meeting is to provide a means of carrying the message of professionalism to all non-member professional engineers registered in each Chapter area.

The Glens Falls meeting attracted a large number of the 60 non-members living in the Glens Falls vicinity.

Ernest L. H. Meyer, P.E., President of the Tri-County Chapter, presided at the meeting. F. Ray Williams, P.E., Vice President, Tri-County Chapter, acted as coordinator. George J. Nicastro, P.E., State President gave a short outline of the structure of the Society, dealing principally with the functions of the State and National Societies. Carl L. Zamjohn, P.E., Zone Director, from Utica, New York, was the Main Speaker of the evening and gave a forceful talk on the accomplishments of the Society and the objectives for the immediate future. Robert C. Read, Executive Secretary, State Society, closed the meeting with a summary of the preceding talks and an explanation of the procedures for obtaining membership.

Most Booster Meetings have resulted in obtaining upward of 40% of the non-members present as new recruits to the Society's ranks. It is felt that this development is a very important step toward the rapid and satisfactory expansion of the membership ranks.

Indiana Engineer Has Popular Song Published

Herbert A. Bogard, member, Indiana SPE, who has a hobby of writing songs, has just had another popular song published entitled "Echoes In My Heart," by the National Publishing Company, P. O. Box 5271, Cleveland, Ohio.

Mr. Bogard wrote the lyric for "Echoes In My Heart" with Sid Cooley of Springfield, Mass., a well known song writer composing the music. Both have had other songs published and recorded.

Although the song has just been released and placed on sale in the music stores it has already attracted considerable attention it is reported.

Lee, NYSSPE, Heads Building Conference

Walker S. Lee, a member of the Monroe County Chapter, New York State Society of Professional Engineers, has been elected President of the Building Officials Conference of America. Last year he was appointed a full time member of the State Building Codes Commission.

Van Praag Talks On Unity at Chicago

Alec Van Praag, past president of NSPE, spoke on the subject "Unification is Possible — a Professional Must," before the Chicago Chapter of the Illinois Society of Professional Engineers, recently.

The Chapter has adopted the third Wednesday of every month as its regular meeting night. On June 21st it will hear Homer Humphrey, discuss The Engineer and his Camera.

WELDING CONNECTORS

Saxe System Welded Connection Units for welded assembly

Saxe Units place in position and securely hold together structural parts to be welded.

As used in many welded structures they *eliminate all hole punching*, producing an economical, rigid, safe and quickly erected structural frame.

Write for 58 pg. Manual containing full engineering design information for welded structures.

J. H. WILLIAMS & COMPANY
Buffalo 7, New York

Canadian Representatives
G. D. PETERS CO., Montreal 2, Canada

UNITED STATES TESTING COMPANY, Incorporated

Offers a comprehensive professional service in sampling, engineering inspection and testing, microscopy, chemical and bacteriological analysis, physio-chemical, acoustical, thermal and electrical measurements, product and process investigation and development, research, and consulting.

1415 PARK AVENUE **HOBOKEN, NEW JERSEY**

Hudson County Engineers Present Air Pollution Resolution to State

Highlight of a recent meeting of the Professional Engineers Society of Hudson County, N. J. NSPE, was the ratification and approval of the resolution printed below. The resolution was presented to the State at the 1950 convention.

Whereas, the County of Hudson, New Jersey, has enjoyed national prominence due to its efficient method of smoke control, and

Whereas, the results obtained in controlling air pollution in Hudson County have been cited as a model for other Communities, and

Whereas, air pollution is wasteful of natural resources, damaging to property, detrimental to health, and is a nuisance, and

Whereas, Assemblyman Walter Henry Jones of Bergen County has introduced Assembly Bill No. 110 for control of air pollution on a County and State-wide basis in New Jersey, therefore be it

Resolved, that we endorse the air pollution control work done in Hudson County, N. J. under the administration of Professional Engineers, and be it further

Resolved, that we respectfully request the Board of Chosen Freeholders of Hudson County, N. J., to review the activities of the Department of Smoke Regulation, and the standing of this Department in the annals of the Smoke Prevention Association of America, with the view toward reconsidering their decision to abolish this Department so that the good work done by the Hudson County Smoke Regulation Department may be continued and the citizens of Hudson County may further enjoy the benefits of their labors, and be it further

Resolved, that we endorse Assembly Bill No. 110 authorizing counties in this State to create air pollution prevention and abatement authorities, and that we call on members of our Senate and Assembly to give this bill their most careful consideration." — *Editor's Note: See page 5 for more on air pollution control.*

Johns Hopkins Physicist at D. C. Meet

"Guided Missiles" was the subject of a talk by James H. Walker, Physicist of Johns Hopkins University, before a regular meeting of the District of Columbia Society of Professional Engineers.

Oklahoma Educators Honored . . .

Charles F. Cameron

Edward R. Stapley

A signal honor has been conferred upon two faculty members of the Oklahoma Institute of Technology at Oklahoma A. & M. college in their recent selection for the next biennial 1950 edition of "Who's Who in America." Those honored are Edward R. Stapley, dean of the Oklahoma Institute of Technology, and Charles F. Cameron, professor in the school of electrical engineering. Stapley and Cameron were selected due to their notable contributions in the fields of engineering and education. Both Stapley and Cameron have been extremely active in the movement of professionalizing the occupation of engineering and are members of long standing in the Oklahoma Society of Professional Engineers.

Highways Subject Of Missouri Meet

Mr. L. M. Hoskins, Division Engineer of Division No. 1, State Highway Department and his subdivision heads, (all members), presented the functions of the division at a recent meeting of the Northwest Chapter, Missouri SPE.

Mr. Hoskins reviewed the progress made by the Department, beginning in 1916 when the Hawes' Law took effect. This was superseded by the 1921 Kent Road Law under which the Department has been operating.

Mr. Hoskins called upon his various professional engineers to explain their subdivisions and functions. The names of the engineers and their functions are: J. R. Cunerty, Survey and Plans; C. J. Bussjaeger, Right of Way; J. H. Bevins, Construction; E. O. Mell, Materials; R. J. Ervin, Maintenance; H. L. Morriss, Maintenance Assistant; Geo. L. Argus, Senior Engineer in charge of Office; J. M. Blackburn, Garage and Equipment.

Division No. 1 consists of the 12 northwest Missouri counties. A motion picture was shown of the division's snowplows in action. And as Mr. Ervin stated, "All for your safety and comfort."

Boys' Night Feature of Ill. Gathering

The Central Illinois Chapter, Illinois Society of Professional Engineers, recently held its annual Boys' Night with sons of members, and interested high school seniors, attending with regular members.

The program consisted of brief talks on interesting projects by outstanding engineers. Professional engineer speakers included: George B. Richards, Walter Scherer, B. D. Toney, Sr., Frank Mueller, and G. Lorenz Miller.

Milwaukee Chapter Hear City Planner

On Tuesday, May 9, the Milwaukee Chapter of the Wisconsin Society of Professional Engineers, heard a speech on municipal planning as applied to Milwaukee's traffic problems given by W. R. McConochie, a Municipal Planning Consultant.

Plans are also being made for the spring banquet to be held June 13. Engineers and their ladies will be treated to a delightful dinner and amusing entertainment.

'Registration Law Constitutional' —Pennsylvania Supreme Court

In a searching opinion, the Supreme Court of Pennsylvania has upheld the constitutionality of the Pennsylvania Registration Law. The opinion affirms the decision of the Superior Court that Howarth and Co., illegally rendered engineering services to the Gilman Manufacturing Co., because the principals of the Howarth Company were not registered engineers, and hence could not succeed in an action to recover a fee.

The plaintiffs argued in the Pennsylvania Supreme Court that the engineering Registration Act of the state was unconstitutional because the definition of "practice of engineering" was too vague and indefinite. The Court found that at the time the engineering services were rendered, the Registration Act of 1927, as amended, was in effect, instead of the Registration Act of 1945. The Court pointed out that the definition of the 1945 Act is more explicit than that contained in the 1927 Act, but based its ruling on the 1927 Act definition, thus making the opinion even stronger when applied to the 1945 Act.

The definition in the 1927 Act was in terms of the five major engineering classifications with examples of eight specific branches as constituent parts or combinations of the basic branches. This, the Court found ". . . is broad enough to subject the entire field of engineering to regulation but is, nevertheless, susceptible of a sufficiently precise interpretation, when read in the light of the purpose of the Act and in conjunction with its other sections, to enable one to readily determine whether his activities are within the scope of the prohibition. . ."

An important statement on the clarity of definitions is given by the Court in its ruling that "a more specific definition is improbable, for it is clearly beyond the practical capabilities of any regulatory legislation to define the practice of engineering by attempting to innumerate the many and varied types of engineers that now exist and might possibly exist in the future, and such a definition must, of necessity, make use of somewhat general terms."

The Court's opinion includes a valuable discussion of the definition of "profession" and the distinguishing characteristics of a profession from a skilled trade. "Although it is evident that an exactingly accurate definition of the word 'profession,' which will preclude the possibility of controversy, is impossible, whatever uncertainty may be said to arise from the proper interpretation, as demonstrated above, of the words contained in Section Two is the result of the definitive limitations of our language will not be held invalid on the ground of uncertainty, if susceptible of any reasonable construction that will support and give it effect."

The court concluded that since the Act was constitutional the plaintiffs had, by engaging in the practice of engineering without registering in compliance with the Act, precluded themselves from recovery of the sums due under their contracts with the defendants.

The Pennsylvania SPE took a leading part in defending the constitutionality of the registration law and participated in the argument before the Supreme Court.

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS FOUNDED 1934

President, ALAN G. STANFORD
Vice-President, Robert and Co., Inc.
96 Poplar St., N. W.
Atlanta, Georgia

Vice-President, L. L. DRESSER
President, Dresser Engineering Co.
P. O. Box 2518
Tulsa 1, Oklahoma

Vice-President, ORLAND C. MAYER
1220 Idaho St.
Boise, Idaho

Vice-President, CHERRY L. EMERSON
Vice-President and Dean,
School of Engineering
Georgia Institute of Technology
Atlanta, Georgia

Vice-President, S. L. STOLTE
Bettenburg, Townsend and Stolte
1437 Marshall Ave.
St. Paul 4, Minnesota

Vice-President, WILLIAM F. RYAN
Engineering Mgr., Stone & Webster Corp.
49 Federal Street
Boston, Mass.

Vice-President, JOHN D. COLEMAN
Supervisor, Material Utilization
Works Manager's Staff
Frigidaire Division
General Motors Corp.
2520 Elsmere, Dayton, Ohio

Treasurer, RUSSELL B. ALLEN
Professor, Civil Engineering, University of Maryland
4610 Hartwick Road
College Park, Md.

Executive Offices
1121 Fifteenth St., N. W.
Washington 5, D. C.

Executive Director, PAUL H. ROBBINS

When Writing Advertisers, Mention
THE AMERICAN ENGINEER

KENNEDY-RIEGGER DRILLING CO., Inc.
Diamond Drill & Core Borings
TEST BORINGS
5418 Post Road — New York City
Telephone KI 9-8458

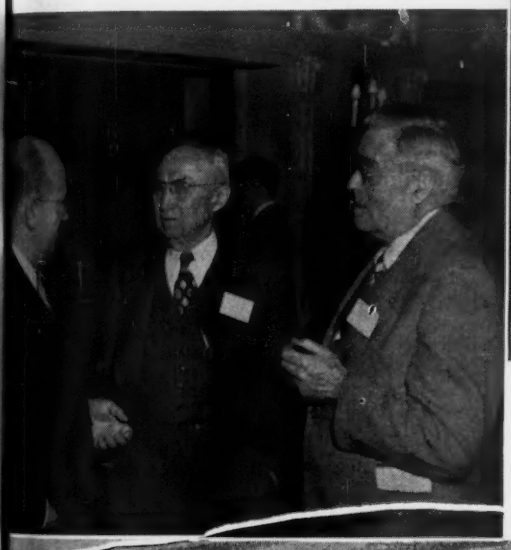
AEROFIN
CORPORATION
Syracuse — New York

THE WIESNER-RAPP CO., INC.
Designers and Builders
of
Chemical Processing Equipment
and
Textile Finishing Machinery
1600 SENECA ST. — BUFFALO 10, N. Y.

Photo Highlights of Ohio's Annual Confab In Dayton

Above. NSPE officials at Ohio meet. Back row, l. to r.: Col. Chester Lichtenberg, Nat. Dir., from Indiana; Allison C. Neff, Nat. Dir. from Ohio; Curtis L. Wilson, Chairman, NSPE Committee on Education. Front row, l. to r.: John D. Coleman, Vice Pres., NSPE; Harry E. Nold, a past president, NSPE; and S. L. Stolte, President-elect, NSPE. *Below.* Scene of banquet. In foreground is Mr. Lloyd A. Chacey, Ex. Secretary, OSPE, and Mrs. Chacey.

Above. Cleveland Chapter officials. Front Row; l. to r.: A. C. Neff, a past president; J. B. Scalzi, editor, Cleveland Engineer; J. Barrett, Sec'y; P. Harlamert, President; F. Palocsay, Membership Chairman; and A. H. C. Shaw. Back Row: T. J. Kauer, Director of Highways, Ohio; B. Baty, Program Chairman; R. A. Freese, past president; G. V. Fleck, a director; T. F. Hindman, a past president; and F. D. Young.



At left: Talking it over are S. L. Stolte, Pres.-elect, NSPE; Fred L. Cellarius, Honorary Chairman of the Convention; and Harry E. Nold, Ohio State professor and Past Pres. of NSPE. *Directly Below:* l. to r. are: E. J. Taylor, Dean of Engineering, Ohio State; R. A. Blackburn, Pres.-elect Penna. SPE; R. N. Waid, Sec'y. Ohio Board of Registration; G. W. Clark, Pres.-elect, Ohio; Chester Lichtenberg, Nat'l. Dir. from Indiana; S. L. Stolte, Pres.-elect, NSPE, and C. E. Hatch, Vice Pres., OSPE. *Lower Right:* Banquet.

Above. OSPE officers. Front row, l. to r.: R. A. Freese, C. E. Hatch, vice presidents; G. W. Clark, president, and E. Larson, vice pres.; Back row: W. T. Adams, Sec'y.; A. L. Neff, NSPE Director; W. G. Stauton, Treasurer; and R. E. Allen, past pres.

The Value of a Professional Society

By

A. H. Kuhnel

New York County Chapter, N.Y.S.S.P.E.

(Editor's Note: The following was submitted to the *American Engineer* as a letter to the editor, in answer to another letter written by Mr. A. A. Vioni that had appeared in the April, 1950, issue. Rather than reduce its length to fit on the "Letters To The Editor" page, we think it contains a message that should be printed in full.)

MAY I offer a few words of guidance to Mr. Arthur A. Vioni of the Kings County Chapter, New York State Society of Professional Engineers, and to any others who may have been troubled by the question, "What can the professional society do for me?"

I am morally certain that this question is a symptom of immaturity in the individual who asks it. The question ought not to arouse anger, for if it is received and answered in anger I think we can be quite certain that the answer will not make a new friend for the Society. Also, I fear that anyone who permits himself to be angered by this question is taking rather an immature attitude himself, and probably misunderstands and misinterprets the motive behind the question.

Perhaps what has aroused Mr. Vioni is his knowledge that certain members of the society, himself included, give generously of their precious leisure hours toward the promotion of the work of the society, often with very little reward for their trouble except the criticism, sometimes gratuitous, of those who are simply not in a position to appreciate the services of these members.

Now, to be an officer or active committee member in our society, or in many another organization with equally worthy objectives, is frequently a rather thankless enterprise. Some will undertake it; many will not. But not all the individuals who will not undertake such responsibility are irresponsible. Many have perfectly valid reasons for their lack of participation, and are deeply appreciative of the efforts of the few who are willing and able to carry the burden. Regardless of this, however, those who accept the responsibility generally do so, without any desire for recognition or reward other than the satisfaction of working in a cause which they believe to be just and in which they have unlimited faith. These are wonderful people. It is from their members that the truly great emerge, not only among engineers, but in all walks of life.

ANY man who undertakes this sort of responsibility and, after a time, begins to feel that he is being imposed upon, who is aroused to resentment and anger by criticism and perhaps even by the lack of appreciation for his efforts, has the wrong attitude toward this sort of work. Perhaps he has undertaken to do too much and is feeling frustration resulting from personal sacrifices he cannot afford to make. Such an attitude will not only harm the cause he is seeking to support, but is likely also to do the individual personal harm. In this situation, for his own good and for that of the cause he espouses, he should at least temporarily divest himself of the responsibilities he has undertaken. He ought to stand back, very much like the artist examining his painting from afar, in order to gain a new and perhaps less personal point of view. After a pause, some searching thought, and perhaps some reorientation, he may find he can return to the task with renewed vigor, greater efficiency and greater faith than before. Perhaps equally or even more important, he may find himself getting a real kick out of it.

I have done a little thinking as to the motivation behind the question, "What can the professional society do for me?" Aside from revealing immaturity, it is also symptomatic of an attitude which can be generalized by the statement, "The world owes me a living."

This general attitude is found among individuals in all walks of life, including, I regret to say, engineers. I think it is a growing attitude which has already spread considerably beyond the point where it can be safely tolerated. It is a serious menace to the very foundations of our way of life, and as such it must be weeded out wherever it threatens to take root.

Among engineers — yes, even among members of our Society—this attitude takes a modified form under the guise of which it is not always recognized for what it really is. This makes it all the more dangerous. What we hear quite frequently among engineers are statements to the general effect that by and large engineers are not compensated in just proportion to the value of their services.

Now many will agree with this, and some will even go so far as to state that the principal objective of our society is to rectify this inequity. Let us pause to examine this proposition and see whether we can honestly subscribe to it.

WE have been brought up to believe, and I am certain that most of us do believe, that the thing that distinguishes our American way of life from that which exists in less favored lands is our liberty. We have no caste system. We pay off on merit and ability. The poorest son of the poorest father can aspire to the presidency and to many another exalted position in our society. We encourage and reward initiative and enterprise, and we see to it that, by and large, each individual rises to the level merited by his efforts.

Now are these beliefs mere myths. Today and throughout our history, we find many shining examples of the truth that these principles do in fact prevail. We can point to members of our own society whose careers are eloquent testimony to this. But we do not need to look for outstanding figures to prove our point. Our Mr. Average, in his job and his home and his community is living and everlasting proof that we do operate by these principles and that they work out better in practice than any other set of principles operative either now or in the past.

If these things are true, how can we subscribe to them on the one hand, and on the other assert that the engineer is the one exception? If these things are true, it follows that, by and large, the engineer, equally with the doctor, lawyer, butcher and baker, rises to the level merited by his efforts. We cannot believe otherwise without attacking the very foundations of our way of life.

To be consistent with our American

principles, we must always imply, when we say that we are not satisfied with the economic status of the engineer, that we are equally dissatisfied with the economic status of our fellow citizens in other walks of life, for otherwise we are stating that, contrary to the principles upon which we as a nation have grown great, our society discriminates against the engineer.

It is a perfectly legitimate objective, and consistent with our principles as a nation, to wish to increase the portion of the riches of life to which the engineer shall be entitled. It is in the manner of doing this that we must be careful to remain within the bounds which our way of life requires us to respect. If we seek to overstep these bounds there can be but two possible results. We may succeed in carrying out our objective, but only by attacking and aiding in the destruction of our way of life. Or we must antagonize our fellow citizens, lose their respect and doom ourselves to failure.

THERE is but one legitimate way in which to increase our portion of the good things of life, and that is to increase our contribution to the wealth and welfare of our community. We must assume, and I am morally certain that most of us do assume, that the wealth which we as a people produce is distributed more equitably among ourselves by far than is true under other societies. To increase the portion of any one group, therefore, requires increasing the portion of all. This involves yet greater productivity than that of which we are now capable.

In this area of enterprise we as engineers have a greater opportunity than people in perhaps any other walk of life. I may add that we also have perhaps a greater opportunity than at any other time in the history of our profession because of the tremendous new vistas which the discoveries of modern science have opened to us.

I would suggest therefore, that the chief objective of our Society might well be to alert our profession to the great opportunities ahead and to lead it in the constructive work of making the most effective use of these opportunities. Because of the very expensive, highly specialized training and the incomparable tools and machines representing billions of dollars of investment which society has placed in our hands, we owe society a grave responsibility to so utilize the power thus given us as to realize the greatest benefit to all.

TODAY we are still far from having reached that objective. Much can be done by each individual. But there is a far greater role to be performed by us collectively, operating through the agency of our professional society. To continue to work only as individuals is to invite chaos and confusion. Often we shall find ourselves at cross purposes with much effort wasted. New codes of ethics and practice must be evolved, old laws must be changed and new laws added. Beyond this there must be an agency representing the profession as a whole which can serve the people acting through their local, state and federal governments in an advisory capacity on programs requiring professional judgment. These and many more are the tasks which can be most effectively handled only by our professional society.

What can the professional society do for me? It can give me a voice and an authority which I, as an individual, could never hope to possess, in the councils which must inevitably be held when decisions must be made concerning the vast technical problems involved in maintaining and perhaps improving to an unexpected degree our American standard of living. It can give me an incalculable amount of practical and moral support in meeting the challenge which my fellow citizens have thrown up to me by licensing me as an engineer. In leading the profession in successfully reaching the goal of realizing the maximum possible benefit to all out of the opportunities, training and tools which society has placed in our hands, our professional society can gain for the profession and for all individual members of it the respect and gratitude to which we shall be entitled for a job well done.

You see, there are answers to the challenges of the immature skeptic. But the answers lie in deeds rather than words. And it does seem most important that the deeds of our professional society be always directed toward objectives consistent with the great principles which are our national heritage, our foundation and our strength.

Pamphlet No. 6. — Where Is the Money Coming From? by Morris S. Rosenthal.

Mr. Rosenthal, president of the import-export firm of Stein, Hall and Co., and president of the Council of American Importers, covers the type and amount of financial assistance needed. What the role of the public and private investor should be. Needed guarantees for private risk. Price 40 cents.

BOOK LOOKS

Title of book: An Introduction to the Engineering Profession.
Author: By Dean H. W. Barlow.
Published by: The Addison-Wesley Press, Inc., Kendall Square Bldg., Cambridge, Mass.

This book has been selected by Mr. Reginald Hawkins, head of the Science and Technology Division, New York Public Library, as one of the one hundred best technical and scientific books of the year 1949.

The book explores the field of engineering simply and thoroughly and provides factual and vocational information that will be of interest to high school seniors, college students parents and vocational consulars.

* * *

The following books are part of a series concerning the Point 4 Program that have recently been published by the Public Affairs Institute. The Institute, which is located at 312 Penna. Ave., S. E., Washington 3, D. C., will provide the pamphlets at the prices noted.

Pamphlet No. 1.—A Policy and Program for Success, by Dewey Anderson and Stephen Raushenbush.

Covers the scope and nature of a bold fifty-year program, United States and United Nations responsibilities, costs, chances for success. Price 40 cents.

Pamphlet No. 2.—Two-Thirds of the World, by Harold R. Isaacs.

Isaacs, formerly foreign editor of *News-Week*, and an authority on Asia, writes on the economic, psychological and political legacies of empires. The need for adjustment between East and West. What that adjustment has to be. Whom do we help? Price 40 cents.

Pamphlet No. 3. — Groundwork for Action, by Morris L. Cooke.

Deals with the immediate job to be done in underdeveloped regions. What plans have been made, what work has started, what the next steps are. Price 50 cents.

Pamphlet No. 4. — People, Food, and Machines, by Stephen Raushenbush.

The measurable prospects of obtaining an adjustment between population and food supply in underdeveloped areas through increased and improved incomes. Costs of action. Costs of inaction. Conditions of success. Price 50 cents.

Air Pollution Control

(*Continued from page 7*)

condition. Much of this poor record may be attributed to the fact that too few people in the plants understand the principles of combustion. Nor do they appreciate the need to protect the tremendous investment in power plant facilities. The plant engineer concerns himself with the management of the business, but the power plant operation may be the one operation in the plant which is least understood, or least appreciated for its importance to the overall operation. With minor exceptions the power plant is the least frequently inspected operation in the average business or plant—this is almost universally true.

PROPER training of power plant personnel is rarely found except in the very large industrial and utility plants. How can efficient smokeless operation of the average plant be taken as an established fact, without giving it adequate supervision and proper facilities?

There is a definite need for expert advice on smoke and air pollution problems. The professional engineer should be in the forefront of all movements to build effective practical programs for air pollution control in accordance with well-established engineering principles. These programs are civic obligations in which he should take his proper place, and for which he is well fitted by his training and experience to take a leading part. The professional engineer is the logical one to lead in the development of an air pollution control ordinance, since he understands the engineering phases of smoke control, and the economic problems involved. He is also familiar with the availability of various fuels, and with the importance of these fuels in the economic life of any particular city.

Since the professional engineer is licensed by law and since he is permitted to design, supervise and install fuel-burning equipment, he should be in a position to prepare or assist in the compilation of proper Rules and Regulations for ordinances governing the installation of fuel burning equipment.

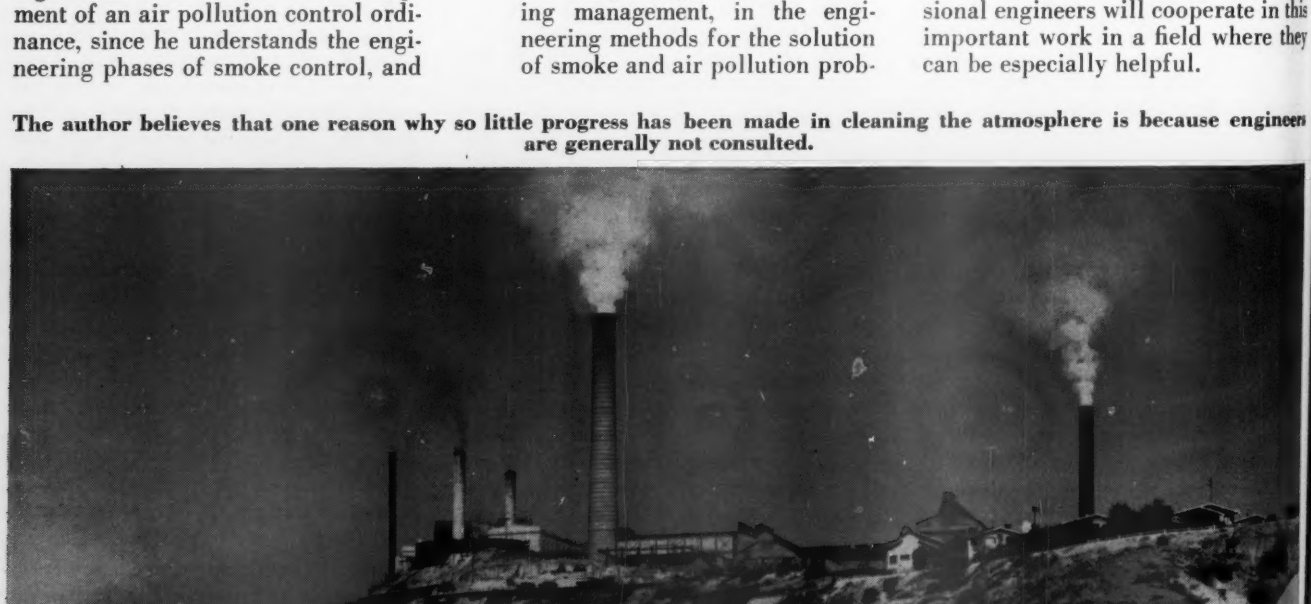
THE professional group is the logical body to look to, in the selection of Boards or Commissions to guide air pollution control programs. These Boards or Commissions, of either an advisory or appeal status, should always have as one or more of their members a professional engineer. Such individuals have the necessary qualifications for making the selection or recommendation of a smoke control engineer, because they are best fitted to judge what qualifications and personnel are necessary to administer the office of a city's chief control engineer.

The professional engineer can contribute to the success of anti-air pollution programs in these specific ways:

1. By giving support and impetus to the establishment of courses in smoke abatement or air pollution control in school, college and university curricula.
2. By participating in a program of education of the general public and plant personnel, including management, in the engineering methods for the solution of smoke and air pollution problems.
3. By operating properly his own plant or plants; by observing fuel burning operations and following up compliance with instructions previously provided.
4. By promoting proper design of heating and power plants, industrial processes, etc. to the end that air pollution may be kept at a minimum.
5. By aiding in all research programs for the efficient operation of fuel burning equipment in the application of combustion controls to accomplish smokeless operation and improvement in fuel utilization.
6. By studying the fuel situation, fuel sources and reserves, cost and availability, and by applying these facts to any local situation with which he is engaged in his professional work.
7. By establishing standards of emission, standards of measurement and values which are practical and attainable.

The obligation of keeping the atmospheres of our cities and communities clean is not the job of the fuel merchant alone, nor of the equipment manufacturer, nor of the users of fuel and equipment; it is rather a responsibility and obligation which we all owe jointly to the communities in which we live. The coal industry and the railroad industry are spending millions of dollars in research for better fuels; for better fuel utilization equipment; in analyzing the causes of smoke and air pollution. It is sincerely hoped that the professional engineers will cooperate in this important work in a field where they can be especially helpful.

The author believes that one reason why so little progress has been made in cleaning the atmosphere is because engineers are generally not consulted.



More Than 700 Engineers, Scientists Meet To Discuss Air Pollution

More than seven hundred persons, representing engineering, medicine, industry, law and government, met in Washington recently to see what could be done about the Nation's serious air pollution problem.

Proposed by President Truman and guided by Interior Secretary Oscar Chapman, the meeting was sponsored by the president's Inter-departmental Committee on Air Pollution.

Truman told the conference that air pollution had become a serious problem, but its control is up to each community affected. The Federal role, the President added, consists of taking leadership in research on air pollutants. Such research, he explained, would exhibit standards for determining and controlling air contamination, and thereby a base for establishment of local anti-pollution laws.

In another talk, Assistant Interior Secretary C. Girard Davidson called upon engineers to "point the way for the many groups cooperating voluntarily who are ready to embark on a long-range program of air pollution control."

Advice Asked

Davidson suggested that the conference, advise the government whether the major problems involve public interference, ignorance of the dangers or of the method of control.

"Does the structure of the local government inhibit progress?" Davidson asked.

"Should our zoning laws be changed? Is the tax problem making it difficult to pay the cost of control?"

Davidson called a free interchange of information at the meeting as being in the best scientific and engineering tradition. "All of us are determined that our democracy will continue to provide the political and intellectual climate that encourages the free exchange of knowledge," Davidson said.

After meeting in short general sessions, those attending the conference split into seven separate panels to discuss in detail problems requiring immediate attention. About 80 papers were presented in the two days of panel discussions. Of particular interest were those discussions appraising existing laws, and proposals for future laws governing the control of air pollution.

Engineers and scientists studying legislation concluded that the solution to the problem of polluted air depends not on more legislation nor more stringent enforcement, but on more research. This did not mean that efforts to reduce the quantities of foreign matter released to the air should be relaxed, but it was pointed out that only after we know the answers to many questions will it be known how far the Nation must and can go in clarifying the air. Until science and engineering have provided answers to these questions, statutory regulations are bound to be abortive.

On the final day of the meetings, the conference adopted a resolution urging the appointment of an advisory consul on air pollution. The resolution suggested that the Consul should be composed of representatives of research and education, industry and of federal, state and local governments.

Doctor Asks Engineers To Aid In Control Of Air Pollution

In a story appearing in a recent issue of Safety Engineering, Dr. A. J. Lanza, Chairman, Institute of Industrial Medicine, New York University-Bellevue Medical Center, and Chairman, Committee of Industrial Health, American Medical Association, points out that atmospheric contamination in our cities and industrial areas is of growing concern.

Dr. Lanza said that the professional engineer can serve his employer, and his civic responsibilities, by obtaining careful and correct analysis as to the nature and behavior of the major pollutants in the atmosphere of his industrial community. The engineer can stimulate the necessary action by public authority to see that the local atmosphere is sampled and analyzed often enough to furnish him with correct information as to what contaminants are present, and to what extent under varying conditions of weather and factory activity.

"My purpose," the Doctor said, "is to plead for the exercise of educated common sense in considering the nuisance of air pollution as a problem of public hygiene. Atmospheric pollution prevails in varying extents in any city of any size. According to the American Municipal Association, only four American cities of over 25,000 population have not established some form of air pollution control. This has evolved as smoke abatement, but today enlightened public opinion realizes that smoke, being visible, receives too much blame."

Robbins Before Senate Committee On Planning Bill

"President Truman's recommendation to transfer the administration of the Advance Planning Program from the Bureau of Community Facilities, General Services Administration, to the Housing and Home Finance Agency, should be rejected," Paul H. Robbins, Executive Director of the National Society of Professional Engineers, said recently in testimony before the Senate Committee on Expenditures in the Executive Department in Washington.

Robbins summarized NSPE's position as follows:

1. The proposal is contrary to the Hoover Commission recommendations. The Hoover Commission recommended that the Community Planning Services of the General Services Administration be transferred to the Interior Department. The Hoover Commission reports contemplate that the Interior Department will become the primary Engineering Service Agency of the government.
2. The Advance Planning law specifically excludes housing from its operation and it is therefore inconsistent to place a non-housing function into an agency concerned primarily with housing.
3. The Housing and Home Finance Agency has had no experience in administering Advance Planning of a public works nature.
4. Since the operations of the Housing and Home Finance Agency are geared more directly to considerations which are not in line with those which are involved in public works activities, placing of advance planning in this agency could result in a failure to give the emphasis intended by Congress to this program.

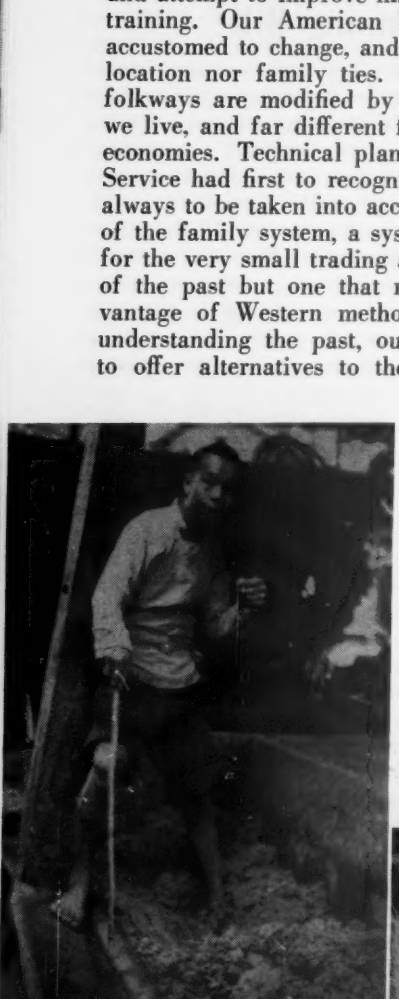
LATE AND IMPORTANT

As the *American Engineer* went to press, it received word that the Senate approved Reorganization Plan Number Seventeen by a vote of 29-23.

An Engineer in Point 4

(Continued from page 9)

neers were at last in a happy, enviable position, the ground work had been laid for the real job they had come to do, namely, imparting their own store of technical know-how. Easily the most satisfying aspect of the work, it is still not without its problems. An American engineer must take the worker where and how he finds him and attempt to improve his quality by patient, persistent training. Our American labor force is well educated, accustomed to change, and is held neither by geographic location nor family ties. Our social structure and our folkways are modified by the mechanical age in which we live, and far different from those of the agricultural economies. Technical planning at Agricultural Industry Service had first to recognize this difference. There had always to be taken into account the compartmentilization of the family system, a system which has been adequate for the very small trading and manufacturing companies of the past but one that must be modified to take advantage of Western methods of production. So while understanding the past, our engineers had to be ready to offer alternatives to the close-knit family organizational unit with assistance in forming cooperatives or small joint stock companies for industrial development.



Willing to be taught. Here, left, coolie beats paper pulp by traditional method. Below, beating pulp with new semi-modern methods.

If working in India an engineer would likewise have to take into account the caste system which stratifies society into fixed groups each with its special responsibility toward the productive system. Thus, the tanning of leather, for example, which is relegated to the lowest of the scheduled classes, cannot be improved until education reaches the lowliest or until the technicians are willing to break through the formidable caste barrier.

Chemical insecticides were manufactured for the first time.

BARRIERS other than family or caste system confront the engineer as well. At Shaoyang political and economic power in all the country-side surrounding AIS headquarters was in the hands of a few dozen families. This local gentry with whom we had to cooperate for survival in a society where rule by law is not known, were not particularly sympathetic. Though they did not directly oppose our efforts to raise the productivity of the farmer and laborer, they could not understand our preoccupation with matters of so little import. It had not yet been borne home to them that the strength of a modern society lies in having the bulk of its population educated, healthy and productive. Experience of other organizations in China and India as well indicates that efforts to reconstruct rural industrial economies can be effectively sabotaged in more overt fashion. The money lender-landlord of China has his counterpart in the zamindar of India and a multitude of relatives in other underdeveloped lands. It will take time for this powerful class to learn that the exploitation of natural resources through the use of machinery is a quicker road to wealth than the exploitation of their fellow man.

The economic as well as the social system presents its problems to an engineer. Relative importance of man and machine differs in an area offering coolie labor at ten dollars a month and skilled labor at only twenty. The relationship is further unbalanced by the high charges for machinery.

It has often been observed that the output per worker in the East, even with the same tools, is lower than in the West. Where unemployment and underemployment are chronic, there is an irresistible tendency to spread work as thinly as possible to make each job cover the largest number of persons. It was not at all unusual in AIS to find three men doing the work of one. Even new industries cannot resist the pressure of the unemployed and will have to contend with superfluous teaboys, secretaries, abacus operators, and heads of general affairs sections until employment opportunities have increased sufficiently to force the adoption by employers of higher standards of efficiency.

FINANCE capital is scarce in a country having little surplus beyond the immediate needs for food, clothing and shelter, and is therefor expensive. Variable tax policies

and often an unstable currency such as the gigantic inflation still spiraling in China, add their burden to the mounting pile of problems.

One soon learns that he is not alone, however, when working in the hinterland of underdeveloped countries. In Shaoyang we encountered in turn the many agencies striving for betterment along their own chosen paths, and attempted to coordinate our efforts with theirs. Workers and specialists in the fields of public health, education and agriculture came to our city in succession so that our engineers were in touch with these branches of endeavor to a degree never found in the United States.

A highway construction program may start with the building of a cement plant, or the highway itself, when finished may provide the means for shipping a surplus raw material from an agricultural community to a factory area as part of a larger rural reconstruction program. Adult education will be initiated to combat illiteracy among employees in order that new ideas may be imparted to them through the printed page. But the building of a paper mill may be the first step in adult education. A labor force riddled with disease will remain unproductive until public health campaigns have been set in motion. Improvement in farm productivity increases the purchasing power for manufactured goods in one segment of the population and in time releases further labor for industry. This complex interrelationship of agriculture, industry, transportation, public health and education soon becomes apparent to all the many organizations and their agents at work in underdeveloped lands. Any advance in one line of endeavor needs the support of them all.

IF plans for foreign technical assistance under Point 4 materialize, there will be an immediate call for American agriculturalists, scientists, and engineers in large numbers. Except for Latin America and a few scattered projects in other areas such as the one described at Shaoyang, we have done so little abroad that recruitment will have to include many men who have not previously been tested by foreign work. The request will come not only from the United Nations and the United States government agencies, but from private organizations for the installation and operation of facilities abroad and for long term programs of development and education. Greater concern must be exercised in this recruitment than was given to that for China if the program is to achieve its avowed ends.

What are the lessons to be learned from the experience of three years in China in regard to this next important step in America's foreign policy? Even allowing for errors of judgment and outright failures, some truths are apparent out of this relatively expensive experiment which can guide our planners. First we feel must be a realization that it is not possible to mobilize sufficient numbers of engineers, either Americans or natives to the country being assisted, to effect directly the living standards of the more than one billion persons living in the underdeveloped areas. The American engineer can be no more than a catalytic agent who can seek out latent talent and through training and example spur it into action on its own behalf. Experience has shown that it is much easier to Westernize some very small segment of a backward country than to catalyze such changes from within its heartland. However, changes brought about from within, which take into account the character of the particular economic and social systems, will be more lasting and will impart less shock in fulfillment.

OBVIOUSLY needed are engineers with broad interests in economics and sociology. Those with experience in working with people rather than with things will have had good preparation for the job in which

(*Continued on page* 32)

LEGISLATIVE REPORT (*Continued from page 17*)

The majority opinion discusses the real estate board's mechanics of enforcing the standard charge schedule through a code of ethics and the fact that departure from the prescribed rates had not caused the Washington Board to invoke any sanctions. The opinion indicates, however, the view that whether the schedule and code of ethics attendant to it is mandatory or non-mandatory is of little consequence. "Price-fixing is per se an unreasonable restraint of trade. . . An agreement, shown either by adherence to a price schedule or by proof of consensual action fixing the uniform or minimum price, is itself illegal under the Sherman Act . . . and the fact that no penalties are imposed for deviations from the price schedules is not material . . . subtle influences may be just as effective as the threat or use of formal sanctions to hold people in line."

The lower court found that the National Association and its executive vice-president did not conspire with the Washington Board to fix and prescribe the rates of commission to be charged by the members of the latter. This finding the appellate court affirmed.

Many inferences and interpretations may be drawn from the decision of the high tribunal. It would appear that for the engineering profession the following conclusions are in order.

(1) The application of the antitrust law to the professions is unsettled.

(2) Schedules of minimum salaries for employees, professional or otherwise, are protected by the Clayton Act.

(3) Whether or not a schedule of minimum fees is enforced through a code of ethics or otherwise is of no moment.

Finally, there is nothing in the Real Estate Case decision which should cause engineering societies to drop their schedules of minimum fees and salaries or to cease promoting them.

Even should it be finally held in the future that the professions are within the antitrust law it would still be necessary to analyze the basic differences between engineers' schedules and those which have been declared illegal. The important differences between engineers' schedules and those of the type exemplified by the real estate board were discussed at some length in the American Engineer for December, 1948.

The Bifocal Stage

(*Continued from page* 11)

(relatively few in number I am afraid), need in many cases a clearer definition of some of the detail of work done by engineers whose noses are at the grindstones of day-to-day working conditions.

Society Workers Have Double Focus

This matter of concerning ourselves with both the day-to-day close-up type of work and with the overall problems is what we mean by the Engineering Profession being at the bifocal stage. Most of us in Professional Society work spend the day at our immediate jobs, looking through the lower lens — engineering education and experience. At the end of that daily stint we look up and observe the job that has to be done everywhere 'round about—the social, political and economic phases of engineering that are brought to life in the program of the Professional Society. We can't do justice to the full potentialities of engineering without the far reaching vision of the long-range type of work. The Professional Society is the only National organization which provides the necessary focus upon long-range objectives that benefit Engineers in all branches. Let's review briefly some of the personal advantages of membership in the Professional Society.

MEMBERSHIP in the Professional Society is advocated all too frequently on the basis of "the advantages the Society has to offer." I prefer to think of the value of membership—as do most "buyers" of anything—as "benefits," or what in terms of my requirements, the goods or services will do for me or will enable me to do for others. On this basis of "benefits," I see membership in the Professional Society of value to me (and I hope you can see a like value to you) in the following ways: (Note—These are largely a restatement to a "benefit" concept, of the 17 "advantages" set forth in the National Society's excellent publication *"Man Was Naked."*)

I will have a part in setting Professional standards in engineering—establishing and watching over ethical practices, taking part in proving the economic worth of the engineer and helping the profession move up the ladders of social acceptance and political influence.

I will be able to combat the work of competitive groups whose activities are prejudicial to engineering interests and will know that any repercussions or temporary set-backs are being borne on the broad shoulders of a group, not mine alone.

I will be able to protect the public, and the interests of other Engineers and my own, by calling attention to misrepresentations by the unprincipled and unqualified practitioners. This can be done through group action in which I need not become personally involved.

My work will be with men having the same motivating desires, will be assured of sympathetic support and I will know there is an organized force working for and with me. Ideas which have been difficult for me to promote individually will be subject to the "snow-balling" effect of group influence.

I will be able effectively to help young people select a career, improve upon their education opportunities and train them for Professional Engineer status. As a part of this work I will be able to help Engineering Colleges develop more effective curricula, including more subjects dealing with the living and working conditions of Engineers in all branches.

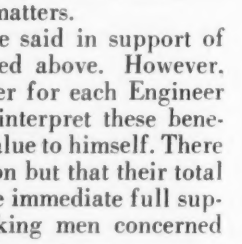
I will have personal representation at local, State and National levels in legislative matters of Engineering interest. I will be provided with up-to-the-minute reports of the status of such legislative matters.

Much could be said in support of each benefit listed above. However, it would be better for each Engineer to amplify and interpret these benefits in terms of value to himself. There can be no question but that their total value justifies the immediate full support of all thinking men concerned with Engineering progress.

HOW many of us are at the bifocal stage in Engineering with vision adapted to the "at hand" and "overall" objectives? Most of us know and do something about the day-to-day technical problems to be solved, and are giving the close attention needed to keep up with trends in technical development and to apply that information in our designs and project operations.

But do we realize and are we doing something about the overall problem of advancing the profession in the minds of the public, the broad work of selling the profession at its true value, keeping it in good repute, protecting our investment in it and making it an attractive field for young men to choose as their life work?

If each of us has acquired a sharp focus in this double objective of the Engineering Profession—*and is doing his best to improve conditions under both objectives*—then you and I can claim distinction for having reached the *Bifocal Stage in Engineering.*



Massachusetts Society—June 8, 9, and 10, Statler Hotel, Boston, annual meeting.

NSPE Annual Meeting—June 8, 9, and 10, Statler Hotel, Boston.

Georgia Society—June 16, and 17, Bon Air Hotel, Augusta, annual meeting.

Professional Engineers of North Carolina—July 27, 28, 29. George Vanderbilt Hotel, Asheville, N. C.

Engineer in Point 4

(*Continued from page* 31)

every act is one of teaching. A man who has thrown himself into a job of promotion, teaching, or research for the love of accomplishment rather than for material gain might prove a better than average risk. Knowing how to use one's own hands is an asset where every one who drives must be as well his own mechanic, and where even some of the simple mechanical skills are not available.

Compensation in forms other than salary should draw out the most desirable men. Two items in this category, which come to mind, are provision for normal family life which in itself brings the home touch which will soften the adjustment to new ways, and a long term contract of at least three to five years which would ensure a continuity of personnel and allow one man to measure his own contribution to a program in which visible progress is slow and must be calculated in decades rather than years.

We as American engineers are faced with the challenge of adapting the industrial techniques that have made us so fabulously productive to the primitive economies of underdeveloped countries. A successful fulfillment will not only thwart the growth of totalitarian institutions by providing higher standards of living and economic stability but will provide the basis for a two-way highway of trade between the country so assisted and ourselves. Unless the best qualified in every respect, technically and spiritually, respond to this challenge, the work will be attempted by the unprepared and the inadequate to the detriment both of the underdeveloped country seeking our help and to our own world reputation.

Member State Societies N. S. P. E.

Officers and Directors

Arizona

Pres., William D. Williams, 3033 N. 3rd St., Phoenix; *Nat. Dir.*, Earle V. Miller, 1025 West Monte Vista Rd., Phoenix; *Sec.-Treas.*, Harold W. Yost, 508 Heard Bldg., Phoenix.

Arkansas

Pres., Fred J. Herring, Arkansas Highway Dept., Little Rock; *Nat. Dir.*, Leonard N. White, 405 County Court House, Little Rock; *Sec.*, Louis E. Bona, 115 N. Cedar St., Little Rock.

California

Pres., John L. Trebilcock, 844 Woodland Ave., San Leandro; *Nat. Dir.*, A. C. Bullen, 1985 23rd Ave., San Francisco 16; *Exec.-Sec.*, Arthur C. Bullen, Jr., 1070 Los Flores Dr., Del Rosa.

Colorado

Pres., Alfred J. Ryan, 1340 Glenarm Pl., Denver; *Nat. Dir.*, Loren Adams, 674 Clermont St., Denver; *Sec.*, Howard A. Lane, P. O. Box 2522, Denver; *Treas.*, Paul C. Von Rosenberg, 1235 Grant St., Denver.

Connecticut

Pres., L. Morton Reed, 42 Florence Ave., Devon; *Nat. Dir.*, James D. Skinner, 232 Golden Hill St., Bridgeport 4; *Sec.*, Louis Lichtenstein, 23 Elder St., Bridgeport.

District of Columbia

Pres., Ralph A. Dane, 804 Beverly Dr., Alexandria, Va.; *Nat. Dir.*, J. H. Powers, 1750—16th St., NW, Wash., D. C.; *Sec.-Treas.*, Thomas Smyth, 1600 East-West HiWay, Silver Spring, Md.

Florida

Pres., Sam P. Turnbull, State Road Dept., Tallahasse; *Nat. Dir.*, John F. Reynolds, P. O. Box 4442, Jacksonville; *Sec.-Treas.*, Homer B. Scott, P. O. Box 4817, Jacksonville.

Georgia

Pres., Charles E. Layton, P. O. Box 486, Thomasville; *Nat. Dirs.*, Ray L. Sweigert, Georgia Institute of Technology, Atlanta, John W. Lovell, 203 Alexander St., Marietta; *Sec.* George M. Normandy, Box 520, Atlanta.

Idaho

Pres., Allen S. Janssen, Dean of Engineering, University of Idaho, Moscow; *Nat. Dir.*, Orland C. Mayer, 1220 Idaho St., Boise; *Sec.*, J. L. Morris, City Engineer, City Hall, Boise.

Illinois

Pres., Dr. George E. Ekblaw, 216 Natural Resources, Urbana; *Nat. Dirs.* William A. Oliver, 402 Engineering Hall, Urbana, C. T. Morrisett, 1509 W. Edwards St., Springfield; *Sec.-Treas.*, H. E. Babbitt, 204 Engineering Hall, Urbana.

Indiana

Pres., Richard J. Erb, 205 N. Seminole Circle, Ft. Wayne; *Nat. Dir.*, Chester Lichtenberg, 4624 Tacoma Ave., Ft. Wayne; *Exec. Sec.*, J. B. Wilson, 10 W. Ohio, Indianapolis.

Kansas

Pres., Walter G. Johnson, 1831 Medford Ave., Topeka; *Nat. Dir.*, C. Y. Thomas, Spencer Chemical Co., P. O. Box 604, Pittsburg; *Sec.*, Abram Pratt, 405 Crawford Bldg., Topeka.

Maryland

Pres., Paul William Backhus, 2023 Maryland Ave., Baltimore 18; *Nat. Dir.*, Owen W. Turpin, 1004 N. Charles St., Baltimore; *Exec. Sec.*, Stewart W. Parker, 511 Murdock Rd., Baltimore.

Massachusetts

Pres., Edgar A. Harty, 8 Cypress St., Marblehead; *Nat. Dir.*, Samuel Lewiton, 49 Federal St., Boston; *Sec.*, C. R. Westaway, c/o Ingersoll-Rand Co., 285 Columbus Ave., Boston.

Michigan

Pres., Arthur F. Plant, 227 Curtis Bldg., Detroit; *Nat. Dirs.*, Otto H. Hall, 134 N. Hayford Ave., Lansing 12, Hugh E. Keeler, 231 W. Eng. Bldg., Ann Arbor; *Exec. Sec.*, J. H. Nimmo, 100 Farnsworth Ave., Detroit.

Minnesota

Pres., Gorden Bodien, 203 City Hall, Minneapolis; *Nat. Dirs.*, T. S. Thompson, 4332 29th Ave., S., Minneapolis, M. C. Peterson, 5524 Morgan Ave., S., Mineapolis; *Exec. Sec.*, Dr. Richard R. Price, 1000 Guardian Bldg., St. Paul 1.

Missouri

Pres., Richard Y. Jones, Box 283, Neosho; *Nat. Dir.*, C. G. Roush, 1014 Fairfax Bldg., Kansas City; *Exec. Sec.*, Clifford Wood, Box 365, Jefferson City.

Nevada

Pres., J. H. Buehler, Bristol Silver Mines, Pioche; *Nat. Dir.*, L. J. H. Smith, P. O. Box 1, Henderson; *Sec.*, R. T. Campbell, Box 1015, Henderson.

New Jersey

Pres., Hugh C. Clarke, 97 Bentley Ave., Jersey City 4; *Nat. Dirs.*, C. George Krueger, 28 Cross Gates Rd., Madison, Leo K. McKee, 16 McLaren St., Red Bank, Joseph J. Tomasulo, 116 Bridge St., Roselle Park, William S. Dean, 38 Oakley Ave., Summit; *Sec.-Treas.*, Merton S. Adams, 803 N. Penna Ave., Morrisville, Pa.

New Mexico

Pres., Guy Martin, 1415 E. Roma Ave., Albuquerque; *Nat. Dir.*, E. B. Bail, 211 S. Dartmouth, Albuquerque; *Sec.-Treas.*, Dr. T. T. Castonguay, P. O. Box 4053, Albuquerque, N. M.

New York

Pres., George J. Nicastro, 200 Madison Ave., New York City; *Nat. Dirs.*, Gardner C. George, P. O. Box 591, Albany, Robert A. Sovik, 122 Claire Rd., Syracuse; *Exec. Sec.*, Robert C. Read, 25 Vanderbilt Ave., New York.

North Carolina

Pres. & Nat. Dir., M. Frank Wooten, Jr., 215 Latta Arcade, Charlotte; *Sec.*, John R. Gove, Box 1182, Chapel Hill.

North Dakota

Pres., E. L. Lium, Univ. Station, Grand Forks; *Nat. Dir.*, George Teskey, 714 Avenue E, Bismarck; *Sec.-Treas.*, Kenneth Piper, State Health Dept., Bismarck.

Ohio

Pres., George W. Clark, 165 N. Congress St., Athens; *Nat. Dir.*, Allison C. Neff, P. O. Box 170, Middletown; *Exec. Sec.*, Lloyd A. Chacey, 40 W. Gay St., Columbus.

Oklahoma

Pres., Allan Craig, 2215 E. 13th St., Tulsa; *Nat. Dir.*, C. S. Worley, P. O. Box 1439, Oklahoma City; *Exec. Sec.*, Col. W. E. Bleakley, 410 Commerce Exchange Bldg., Oklahoma City.

Pennsylvania

Pres. & Nat. Dir., Robert A. Blackburn, Pa. Soc. of Prof. Engrs., Box 2, Ingomar; *Nat. Dirs.*, Thomas A. Monk, 30 S. Queen St., York, J. J. Paine, 1430 N. Euclid Ave., Pittsburgh, Howard F. Rickenbach, Borough Hall, West Reading, Robert V. Hudson, 1115 Sanger St., Phila. 24; *Exec. Sec.*, John T. West, Jr., 228 N. Second St., Harrisburg.

Rhode Island

Pres., Arthur Mather, Jr., 35 Ausdale Rd., Cranston, 10; *Nat. Dir.*, Richard Phelan, 1063 Broad St., Providence; *Sec.*, John W. King, 223 Ivy St., Providence.

South Carolina

Pres., Alec T. Brown, 52 S. Middleton St., Orangeburg; *Nat. Dir.*, Roy A. Stipp, 21 Blue Bldg., P. O. Box 1796, Greenville; *Sec.-Treas.*, Dan F. Frick, 2920 Clarke St., Columbia.

Tennessee

Pres., James E. McDonald, 402 W. Church Ave., Knoxville; *Nat. Dir.*, Warren A. Coolidge, 300 City Hall, Nashville; *Sec.-Treas.*, Oscar L. King, 100 Island Home Blvd., Knoxville.

Texas

Pres., Mason G. Lockwood, 904 Union National Bank Bldg., Houston; *Nat. Dir.*, T. C. Forrest, Jr., Praetorian Bldg., Dallas 1; *Exec. Sec.*, W. M. Driskell, 504 Ewell Nalle Bldg., Austin.

Virginia

Pres., John B. McGaughy, 700 Front St., Norfolk; *Nat. Dir.*, Herbert Mannucia, Presidential Gardens, 11 G.W.C., Alexandria; *Sec.*, Edward H. Ruehl, 400 Virginia Bldg., Richmond.

Washington

Pres., Howard A. Stingle, E. 3157—30th St., Spokane; *Nat. Dir.*, Con. O. Mannes, 3515 46th Ave., N.E., Seattle; *Exec. Sec.*, Grover C. Gaier, 6001 Third Ave., N. W., Seattle 7.

West Virginia

Pres., Robert Williamson, Jr., P. O. Box 252, Charleston; *Nat. Dir.*, Harry G. Kennedy, 1307 Kanawha Valley Bldg., Charleston; *Exec. Sec.*, Ross B. Johnston, P. O. Box 249, Charleston.

Wisconsin

Pres., Edwin J. Kallevang, Wisconsin Power & Light Co., Madison; *Nat. Dirs.*, E. W. Seeger, P. O. Box 464, Milwaukee 1, George Martin, Metro Sewerage Dept., P. O. Box 247, Green Bay; *Sec.*, Arthur M. McLeod, 2221 Chadbourne St., Madison.

Puerto Rico

Pres., Alfredo T. Ramirez, Box 1244, San Juan; *Nat. Dir.*, Salvador Quinones, 20 E. Leland St., Chevy Chase, Md.; *Sec.*, Arturo Clark, Box 1244, San Juan.

Salesmanship for Engineers to be Taught at CCNY

A new training program designed to relieve the extreme shortage of sales engineers will start June 19, it has been announced by Dr. Robert A. Love, Director of the Evening and Extension Division of The City College School of Business. Developed in close collaboration with an advisory board of nine industrial leaders, the Salesmanship for Engineers program will total 300 hours of instruction and will be completed in 15 weeks of daytime or 25 weeks of evening training.

According to Dr. Love, the program will be open only to men with a technical background. They will ge given no further engineering instruction but will get practical training in selling skills and marketing procedure. Classes will be conducted by sales training specialists who are conversant with engineering.

"The program is being offered in response to many requests from both companies and individuals," Dr. Love said. "We hope to channel trained engineers and other technical men into the many open jobs in the industrial sales field. To insure that our training fully prepares the man for one of these positions, we have designed the course along lines recommended by the Advisory Board, which includes executives from almost every industrial area."

Techniques Taught

One half of the course—150 hours—will be devoted to techniques of salesmanship, including such selling skills as the approach, the demonstration, meeting objections, and handling the interview. The largest portion of the remainder, 60 hours, is given over to practicing speech in selling. Thirty hours will be spent in a survey of industrial marketing, while the last sixty hours are evenly divided among market analysis, advertising, and marketing problems as they affect the industrial salesman.

The program will be presented by the school's Salesmanship Unit, the world's largest sales training center. Under the supervision of J. S. Schiff, this unit has trained over 2,000 new salesmen, in addition to providing advanced instruction for experienced salesmen, sales managers, and sales forces of various companies and associations. The regular instructional staff will be augmented for this program by sales trainers chosen for their knowledge of the engineering and industrial field.

PROFESSIONAL DIRECTORY

KNAPPEN TIPPETTS ABBETT ENGINEERING CO.
(Knappen Engineering Co.)
Ports, Harbors, Flood Control, Irrigation, Power, Dams, Bridges, Tunnels, Highways, Subways, Airports, Traffic, Foundations, Water Supply, Sewerage, Reports, Design, Supervision, Consultation.
62 West 47th Street — New York City

PARSONS, BRINCKERHOFF, HALL & MACDONALD
Engineers
51 Broadway, New York 6, N. Y.

COFF
Consulting Engineer
PRESTRESSED CONCRETE STRUCTURES
Design, Estimates, Construction Methods, Supervision
198 Broadway — New York 7, N. Y.

MADIGAN-HYLAND
Consulting Engineers
28-[illegible] 41st Avenue
Long Island City, New York

C. M. HATHAWAY
Consulting Engineer
Electrical—Mechanical—Electronic
Product Development—Project Engineering
Production Designs—Planning
Research—Model Work and Pilot Manufacturing
1315 S. Clarkson St. — Denver 10, Colo.

W. W. SLOCUM & CO.
Engineers
Industrial & Management
National Newark Building
744 Broad St. — NEWARK 2, N. J.

SOUTH FLORIDA TEST SERVICE
Testing—Inspection—Research—Engineers
Consultants and specialists in corrosion, weathering and sunlight testing.
4201 N.W. 7th Street — Miami 34, Florida

FRAZIER-SIMPLEX, INC.
CONTRACTING & CONSULTING ENGINEERS
Furnace Engineering for the Glass and Steel Industries
436 East Beau Street, WASHINGTON, PA. U. S. A.

D. B. STEINMAN
Consulting Engineer
BRIDGES
Design — Construction — Investigation
Reports — Strengthening Advisory Service
117 Liberty Street — NEW YORK CITY

G. LORENZE MILLER
Registered Patent Attorney and Registered Professional Engineer
Patents and Trade-Marks in United States and Foreign Countries
127 E. Prairie St. — Decatur, Illinois

DeLEUW, CATHER & COMPANY
Consulting Engineers
Transportation, Public Transit and Traffic Problems
Industrial Plants, Grade Separations, Railroads, Subways, Power Plants, Expressways, Tunnels, Municipal Works
150 N. Wacker Drive, Chicago 6 — 79 McAllister St., San Francisco 2

ROBERT AND COMPANY ASSOCIATES
Consulting and Designing Engineers
Industrial Plants—Municipal, Highway and Airport Improvements — Power Plants — Water Supply — Sewage and Industrial Waste Disposal — Appraisals — Reports.
Atlanta — Georgia

HITCHCOCK & ESTABROOK, INC.
Lester D. Lee, Associate
Consultants to Municipalities since 1920
Water, Sewerage, Paving, Power Plants, Airports, Public Buildings, Surveys and Appraisals
241 Sheridan Road, Menominee, Mich. — 521 Sexton Building, Minneapolis 15, Minn.

INFORMATION ON LISTINGS

For information concerning listing in the Professional Directory, please write to the Business Manager

THE AMERICAN ENGINEER
1121 15th St., N. W., Washington 5, D. C.